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REPORT

OF THE

TESTS OF METALS

AND

OTHER MATERIALS

FOR

INDUSTRIAL PURPOSES,

MADE WITH THE

UNITED STATES TESTING MACHINE AT WATERTOWN ARSENAL, MASSACHUSETTS,

DURING THE

FISCAL YEAR ENDED JUNE 30, 1900.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1901.

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LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING

REPORTS OF TESTS OF IRON, ETC., AT WATERTOWN ARSENAL.

War Department,
Washington, December 10, 1900.

Sir: I have the honor to transmit herewith, as required by law, copy of the report of the commanding officer of the Watertown Arsenal of "tests of iron, steel, and other materials for industrial purposes" made at that arsenal during the fiscal year ended June 30, 1900.

Very respectfully,

Elihu Root, *Secretary of War.*

The Speaker of the House of Representatives.

Watertown Arsenal,
Watertown, Mass., September 7, 1900.

Sir: In compliance with the requirements of law, I have the honor to forward herewith report of tests of metals, etc., made at this arsenal during the fiscal year ending June 30, 1900.

The total number of specimens tested was 3,029, classified as follows:

Gun specimens	433
For Ordnance Department	1,279
For other Government Departments	322
Investigative tests	588
Tests for private parties	407
Total	3,029

The receipts and expenditures were as follows:

Amount appropriated for testing machine and testing work	$10,000.00
Received from private parties during the year	1,187.70
Total received	11,187.70
Amount expended for service and labor	8,991.09
Amount expended for light, power, tools, implements, and materials for test	2,106.23
Total expended	11,097.32
Balance on hand	90.38

Tests of material for the Ordnance Department and other branches of the Government has been the usual routine work of the testing laboratory during the past fiscal year.

These tests have been with material representing the different calibers of field, siege, and seacoast guns, together with the tests of metals used in small arms, the parts of carriages, mounts for rapid-fire guns, and projectiles.

Tests for private parties have been made, as heretofore, in accordance with a provision of the law whereby any citizen of the United States can have tests made at this arsenal upon defraying the cost of the same. An enumeration of the parties who availed themselves of these facilities is appended to the report. The results of such tests are not published.

The class of investigative tests has included subjects pertaining to ordnance construction and those of a general engineering character.

In this class may be found tests by means of hydrostatic pressure of sections from the breech ends of .30 caliber rifle barrels. There were two series, the first consisting of 4 barrels of special steel, the second of 24 barrels, made from steel in regular use.

In the latter series there were 6 barrels in a neutral state, and 6 each which had been treated, after machine finishing, by heating and quenching with oil at the bore, from temperatures of 850°, 1,000°, and 1,250° F., respectively. One-half this number of barrels had been subjected to the further treatment of firing 500 rounds rapidly with service cartridges.

Pressures were gradually applied and the expansion of the sections measured over the powder chamber.

The elastic limits of the barrels was in the vicinity of 36,000 to 40,000 pounds per square inch, excepting those which had been quenched from the temperature of 1,250° F., where higher elastic limits prevailed. This highest quenching temperature caused hardness in a marked degree in a number of the barrels, and in one instance a barrel burst under the pressure of 61,120 pounds per square inch.

The elastic limits of the several groups of barrels were about the same, with the exception of the hardened barrels above noted.

The refrigerating effect of the cartridge cases in the fired barrels was indicated by the oxide tints, which showed lower temperature colors over the powder chambers than along the rifled parts of the barrels, the metal acquiring a dark blue-black color at the hottest places.

A final examination of the metal was made by splitting the tested sections apart by a diametrical cut, bringing the metal at the bore into view.

Among the fired barrels, the effects of the powder gases were comparatively slight in front of the powder chamber; faint incipient cracks only were visible by the aid of a hand magnifying glass for each of the neutral barrels and those which had been quenched from 850° and 1,000° F. The barrels quenched from 1,250° F. showed a network of cracks, more pronounced and visible to the eye.

The resistance of jacketed bullets when forced through the bore of .30-caliber pressure barrels was the subject of inquiry. Very marked differences in resistance were found, due to the condition of the surface of the bore and to the amount of the metal of the jacket of the bullet displaced by the lands of the barrel.

There were case-hardening experiments on steels containing different percentages of carbon. The furnace conditions included normal temperatures and intervals of time of exposure in contact with the carburizing material; also prolonged exposures and both normal and prolonged exposures at low furnace temperatures.

The tensile properties showed decided modifications by this process. The elastic limits in the case-hardened bars were not well defined. There was a gradual introduction of permanent sets, whereas in the untreated bars a very rapid rate of elongation characterized the lower carbon steels as the elastic limit was exceeded.

For the most part the elastic limits were raised, however, and excepting the higher carbon steels the tensile strength was also increased. Accompanying these changes was a lowering in the values of the elongation and contraction of area in the case-hardened bars.

The varying percentage of carbon in the transverse section of a case-hardened bar brings about these modifications in properties. The more useful results are confined to the treatment of the lower carbon bars.

These tests were supplementary to some tension tests on receivers of .30-caliber rifles, where a low carbon steel is finished by case-hardening.

A large number of tests were made on steel castings representing metal for 6-pounder and 15-pounder gun mounts, the primary object for which was to ascertain whether the metal possessed the requisite properties for acceptance.

This metal is largely used in place of cast iron, and the tests are of further interest in showing the decided gain in strength attainable over the latter metal.

Steel castings have a fairly well-defined elastic limit, in some cases clearly defined, and this may equal or exceed the tensile strength of some cast irons.

Furthermore, in tensile strength and the display of a limited amount of elongation the ordinary grades of steel castings possess valuable properties. Adaptability for hot working and welding are incidental advantages of importance.

Helical springs used in mortar carriages were examined under different conditions of loading.

The paths described are not coincident under ascending and descending loads, from which it follows that the height under a given load is not fixed, but dependent in a degree upon the previous manner of loading.

Under descending loads the heights are less than under corresponding advancing loads, a condition not modified by prolonged rest under a partial descending load.

Slices from the tubes of 5-inch rapid-fire guns were examined for internal strains, the result of treatment by heating the forgings throughout and then quenching from the bore.

This treatment causes a final state of compression at and near the surface quenched, with the metal in a state of tension in other parts of the forging. The magnitude of the strains thus introduced are controlled by regulating the temperature at the time of quenching. The rapidity of cooling also influences the results by varying the relative temperatures of the different parts of the forging.

Internal strains may be reduced in magnitude or eliminated by annealing at different temperatures.

The results of tests of cast irons from the arsenal foundry are accompanied by a statement of the furnace charges. Different grades of iron have been produced to meet the special requirements of metal for different classes of projectiles and for the parts of carriages where high tensile strength was needed, and iron which admits of being readily machined.

There have been additional tests of concrete, supplementing earlier tests on this subject.

A number of pieces of white pine and oak wood from the roof trusses of the Old South Church, Boston, Mass., were tested. Taking into account the condition of this timber, with reference to the number and disposition of the knots in the wood, its compressive strength appears to be normal.

These timbers were removed from the church roof during the summer of 1899 and appear to have been a part of the original trusses put in at the time the church was built in 1729, thus making the age of the timber one hundred and seventy years.

The compressive resistance of rubber and balata springs was determined, and observations made on the effects of increase of temperature on these two kinds of gum. It was shown that balata melts and flows at a temperature which may be reached by the atmosphere, rubber being unaffected over similar ranges of temperature.

Balata can be used in a spring with india rubber, the latter retaining the former in the shape of the spring but without modifying the peculiar properties of the balata, the composite spring being a mechanical mixture.

A spring of rubber and balata with about 50 per cent mineral matter in the composition has successfully withstood the action of oils.

The endurance tests of steel bars in the shape of rotating shafts transversely loaded have continued. Fiber stresses have been maintained at 40,000 pounds per square inch.

Two bars of the same chemical composition, 0.26 carbon, but differently treated, the one which was oil tempered and annealed at a high heat endured over 50,000,000 repetitions of load before rupture. The other, a hardened bar, ruptured at 19,578,810 repetitions.

Among the higher carbon bars which are under test, a bar of 0.82 carbon has endured over 104,000,000 repetitions and continued still unruptured.

Many experiments are needed before general deductions on the subject of the endurance of steels to repeated alternate stresses can be undertaken. It is recognized, however, that the endurance of steel can be raised by different methods, both with respect to the number of loadings as well as their magnitude.

The chemical composition, heat treatment, and mechanical treatment all appear to be functions of the endurance of the metal to repeated stresses.

The tensile properties, as ordinarily defined, afford some indication of the ability of the metal in this respect, but a direct relation between the two has not been shown.

Chemical analyses have been made on the different classes of material which have been subjected to mechanical tests.

The new 100,000-pound Emery testing machine for tests by tension and compression each, has been installed and is now in operation.

A line standard bar of 40 inches capacity, graduated by Bond, has been added to the apparatus of the testing laboratory.

This is one of a set of three to be provided, two of which will be in English units and one in metric.

The equipment of the testing laboratory now consists of the original 400-ton Emery testing machine, to which has been added the new 50-ton Emery machine, an impact machine, a cement testing machine, a standard comparator of 100 inches capacity, a microscopic outfit for micrometallography, and a well-equipped chemical laboratory.

The annual appropriation of $10,000 for the testing department was increased to $15,000 at the last session of Congress. This increased appropriation, with the additional testing apparatus recently acquired, will greatly facilitate the ordinary routine testing of the department and enable more work to be done upon the class of investigating tests, having for their object the general investigation of the properties on constructive materials and the advancement of the industrial resources of the country.

Acknowledgment is due of the invaluable services of Mr. J. E. Howard, C. E., who has been engineer of tests since the establishment of the department.

Very respectfully, your obedient servant,

J. W. Reilly,
Lieut. Col., Ordnance Department, U. S. A., Commanding.

The Chief of Ordnance, U. S. A.,
Washington, D. C.

REPORT

OF THE

TESTS OF METALS AND OTHER MATERIALS

FOR

INDUSTRIAL PURPOSES,

MADE WITH THE

UNITED STATES TESTING MACHINE AT WATERTOWN ARSENAL,
MASSACHUSETTS,

DURING THE

FISCAL YEAR ENDED JUNE 30, 1900.

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3-INCH R. F. GUNS.

SPECIMENS FROM TUBES AND JACKETS.

TUBE.

No. 6598.

Marks, $^{\text{A-261-3 T}}_{\text{B}_2}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00060	.00025	....	....	
30,000	.00100	.00040	....	....	
40,000	.00145	.00045	....	....	
44,000	.00170	.00025	....	....	Elastic limit.
45,000	.00200	.00030	....	....	
46,000	.00225	.00025	....	....	
47,000	.00355	.00130	....	....	
48,000	.00475	.00120	....	....	
49,000	.00700	.00225	....	....	
81,050	....	....	....	....	Tensile limit.

General summary.

Tensile strength per square inch of original section	pounds..	81,050
Elastic limit per square inch of original section	do...	44,000
Elongation per inch after rupture	inch..	.2350
Elongation per inch under strain at elastic limit	do...	.00170
Reduction in diameter at point of rupture	do...	.135
Reduction in area after rupture, per cent of original section		46.2
Position of rupture		".7 from neck
Character of broken surface		silky
Elongation of inch sections		".11, ".364

TUBE.

No. 6798.

Marks, $\overset{A\ 337\text{-}3\ T}{B\ 3}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00040	.00030	....	....	
20,000	.00070	.00030	....	....	
30,000	.00100	.00030	....	....	
35,000	.00120	.00020	0.	....	
40,000	.00135	.00015	....	....	
42,000	.00145	.00010	0.	....	
47,000	.00170	.00025	....	....	
49,000	.00175	.00005	....	....	Elastic limit.
50,000	.00350	.00175	....	....	
51,000	.00475	.00125	....	....	
52,000	.00800	.00325	....	....	
53,000	.00900	.00100	....	....	
54,000	.01050	.00150	....	....	
82,950	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	82,950
Elastic limit per square inch of original section	do...	49,000
Elongation per inch after rupture	inch..	.2300
Elongation per inch under strain at elastic limit	do...	.00175
Reduction in diameter at point of rupture	do...	.125
Reduction in area after rupture, per cent of original section		43.3
Position of rupture		″.7 from neck
Character of broken surface		silky
Elongation of inch sections		″.33*, ″.13

JACKET.

No. 6599.

Marks, $\overset{A}{B}$ 286–3 J
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00055	.00025	....	....	
30,000	.00095	.00040	....	....	
40,000	.00115	.00020	....	....	
50,000	.00145	.00030	....	....	Elastic limit.
51,000	.00170	.00025	....	....	
52,000	.00295	.00125	....	....	
53,000	.00460	.00165	....	....	
54,000	.00650	.00190	....	....	
55,000	.00755	.00105	....	....	
89,450	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	89,450
Elastic limit per square inch of original section ....do...	50,000
Elongation per inch after rupture ....inch..	.2250
Elongation per inch under strain at elastic limit ....do...	.00145
Reduction in diameter at point of rupture ....do...	.125
Reduction in area after rupture, per cent of original section	43.3
Position of rupture	at middle of stem
Character of broken surface	silky
Elongation of inch sections	″.22*, .″23*

JACKET.

No. 6600.

Marks, $\overset{A}{B}{}^{291\text{-}3\ J}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	
30,000	.00100	.00035	....	....	
40,000	.00135	.00035	....	....	
50,000	.00170	.00035	....	....	
51,000	.00175	.00005	....	....	Elastic limit.
52,000	.00195	.00020	....	....	
53,000	.00230	.00035	....	....	
54,000	.00350	.00120	....	....	
55,000	.00450	.00100	....	....	
56,000	.00700	.00250	....	....	
86,950	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	86,950
Elastic limit per square inch of original section	do...	51,000
Elongation per inch after rupture	inch..	.1900
Elongation per inch under strain at elastic limit	do...	.00175
Reduction in diameter at point of rupture	do...	.095
Reduction in area after rupture, per cent of original section		34.0
Position of rupture		″.95 from neck
Character of broken surface		granular, silky spot at circumference
Elongation of inch sections		″.13, ″.25*

JACKET.

No. 6799.

Marks, A-288-3 J B$_2$
Diameter ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00070	.00035	....	....	
30,000	.00105	.00035	....	....	
40,000	.00135	.00030	0.	....	
46,000	.00160	.00025	0.	....	
60,000	.00210	.00050	....	....	Elastic limit.
61,000	.00220	.00010	....	....	
62,000	.00245	.00025	....	....	
63,000	.00275	.00030	....	....	
64,000	.00450	.00175	....	....	
65,000	.00610	.00160	....	....	
74,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section....pounds..	74,000
Elastic limit per square inch of original section....do...	60,000
Elongation per inch after rupture....inch..	.0250
Elongation per inch under strain at elastic limit....do...	.00210
Reduction in diameter at point of rupture....do...	.005
Reduction in area after rupture, per cent of original section....	1.8
Position of rupture....	".8 from neck
Character of broken surface....	granular, flaky streak at the circumference
Elongation of inch sections....	".02, ".03*

JACKET.

No. 6800.

Marks, $\overset{\text{A 277-3 J}}{\text{M}_2}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.		
10,000	.00035	.00025			
20,000	.00065	.00030			
30,000	.00100	.00035			
40,000	.00130	.00030	0.		
46,000	.00145	.00015	0.		
60,000	.00200	.00055			
61,000	.00205	.00005			Elastic limit.
62,000	.00245	.00040			
63,000	.00295	.00050			
64,000	.00400	.00105			
65,000	.00550	.00150			
66,000	.00650	.00100			
100,600					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	100,600
Elastic limit per square inch of original section	do...	61,000
Elongation per inch after rupture	inch..	.1700
Elongation per inch under strain at elastic limit	do...	.00205
Reduction in diameter at point of rupture	do...	.085
Reduction in area after rupture, per cent of original section		30.7
Position of rupture		″.45 from neck
Character of broken surface		granular
Elongation of inch sections		″.09, ″.25*

JACKET.

No. 6801.

Marks, $^{A\ 289\text{-}3\ J}_{B3}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per square inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
30,000	.00100	.00040	....	....	
40,000	.00140	.00040	0.	....	
46,000	.00160	.00020	0.	....	
50,000	.00185	.00025	....	....	Elastic limit.
51,000	.00240	.00055	....	....	
52,000	.00310	.00070	....	....	
53,000	.00400	.00090	....	....	
54,000	.00450	.00050	....	....	
55,000	.00550	.00100	....	....	
95,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	95,100
Elastic limit per square inch of original section	do...	50,000
Elongation per inch after rupture	inch..	.2400
Elongation per inch under strain at elastic limit	do...	.00185
Reduction in diameter at point of rupture	do...	.135
Reduction in area after rupture, per cent of original section		46.2
Position of rupture		".95 from neck
Character of broken surface		silky
Elongation of inch sections		".17, ".31*

TABULATION OF TENSION SPECIMENS FROM 3-INCH R. F. GUNS (STEMS 2" LONG," .505 DIAMETER).

No. of test.	Position in gun.	Elastic limit per square inch.	Tensile strength per square inch.	Elongation.	Contraction of area.	Appearance of fracture.	Remarks.
		Pounds.	*Pounds.*	*Pr. ct.*	*Pr. ct.*		
6598	Tube	44,000	81,050	23.5	46.2	Silky	Breech end.
6798	....do	49,000	82,950	23.0	43.8	.....do	Do.
6599	Jacket...	50,000	89,450	22.5	43.8	.....do	Do.
6600	....do	51,000	86,950	19.0	34.0	Granular, silky spot at circumference.	Do.
6799	....do	60,000	74,000	2.5	1.8	Granular, flaky streak at circumference.	Do.
6800	....do	61,000	100,600	17.0	30.7	Granular	Muzzle end.
6801	....do	50,000	95,100	24.0	46.2	Silky	Breech end.

3.6-INCH B. L. FIELD MORTARS.

SPECIMENS FROM BREECHBLOCKS AND OBTURATING SPINDLES.

BREECHBLOCKS.

Marks.	Diameter.	Sectional area.	Elastic limit per square inch.	Tensile strength per square inch.	Elongation in 2 and 3 inches.	Contraction of area.	Appearance of fracture.	Elongation of inch sections.
	Inch.	*Sq.inch.*	*Pounds.*	*Pounds.*	*Per ct.*	*Per ct.*		
1	.564	.25	58,400	90,040	26.0	65.8	Fine silky, cup shaped	″.43*, ″.09.
2	.564	.25	60,400	96,000	25.0	61.5	.....do..................	″.38*, ″.12.
4	.564	.25	62,200	83,760	24.3	49.7	.....do..................	″.16, ″.40*, ″.17.
5	.564	.25	58,080	85,200	24.0	52.2	.....do..................	″.18, ″.40*, ″.14.

OBTURATING SPINDLES.

1	.564	.25	74,800	104,800	23.5	59.3	Fine silky, cup shaped	″.17, ″.30*.
2	.564	.25	62,800	88,640	27.5	57.0	.....do..................	″.37*, ″.18.
3	.564	.25	62,480	84,400	30.0	63.7	.....do..................	″.40*, ″.20.
4	.564	.25	66,000	94,480	27.0	67.8	.....do..................	″.40*, ″.14.
5	.564	.25	61,000	90,720	26.0	54.6	.....do..................	″.38*, ″.14.
6	.564	.25	61,640	88,720	27.0	57.0	.....do..................	″.19, ″.35*.
7	.564	.25	67,200	98,400	25.0	61.5	.....do..................	″.10, ″.40*.

5-INCH B. L. SIEGE RIFLES.

SPECIMENS FROM TUBES AND JACKETS.

TUBE.

No. 6442

Marks, 14484 B, M T, M
Diameter, ".505.
Sectional area, .20 square inch.
Gauge length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
30,000	.00100	.00040	....	....	
35,000	.00115	.00015	0.	....	
40,000	.00130	.00015	....	....	
42,000	.00140	.00010	0.	....	
43,000	.00145	.00005	....	....	
44,000	.00150	.00005	....	....	Elastic limit.
45,000	.00425	.00275	....	....	
46,000	.00585	.00160	....	....	
47,000	.00655	.00070	....	....	
48,000	.00750	.00095	....	....	
49,000	.00845	.00095	....	....	
87,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	87,000
Elastic limit per square inch of original section	do...	41,000
Elongation per inch after rupture	inch..	.2300
Elongation per inch under strain at elastic limit	do...	.00150
Reduction in diameter at point of rupture	do...	.135
Reduction in area after rupture, per cent of original section		46.2
Position of rupture		1" from neck
Character of broken surface		silky
Elongation of inch sections		".35*, ".11

TUBE.

No. 7153.

Marks, $\overset{A\ 18}{5\ T\ M\ 2}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00025	.00015	....	....	
20,000	.00055	.00030	....	....	
30,000	.00095	.00040	....	....	
35,000	.00115	.00020	0.	....	
40,000	.00135	.00020	....	....	
42,000	.00145	.00010	0.	....	
50,000	.00165	.00020	....	....	
56,000	.00210	.00045	....	....	Elastic limit.
57,000	.00250	.00040	....	....	
58,000	.00300	.00050	....	....	
59,000	.00350	.00050	....	....	
60,000	.00435	.00085	....	....	
61,000	.00550	.00115	....	....	
94,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section....pounds..	94,500
Elastic limit per square inch of original section....do...	56,000
Elongation per inch after rupture....inch..	.1800
Elongation per inch under strain at elastic limit....do...	.00210
Reduction in diameter at point of rupture....do...	.105
Reduction in area after rupture, per cent of original section....	37.1
Position of rupture....	″.50 from neck
Character of broken surface....	silky, trace of granulation
Elongation of inch sections....	″.28*, ″.08

JACKET.

No. 6512.

Marks, $\substack{13169\ B_4 \\ BT_2\ M}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.		
10,000	.000300	.000200			
20,000	.000667	.000367			
30,000	.001000	.000333			
40,000	.001333	.000333	0.		
46,000	.001600	.000267	.000033	.000033	
50,000	.001700	.000100			
51,000	.001733	.000033			
52,000	.001767	.000034			Elastic limit.
53,000	.002067	.000300			
54,000	.003000	.000933			
55,000	.004667	.001667			
56,000	.005833	.001166			
57,000	.006333	.000500			
99,040					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	99,040
Elastic limit per square inch of original section	do...	52,000
Elongation per inch after rupture	inch..	.1967
Elongation per inch under strain at elastic limit	do...	.001767
Reduction in diameter at point of rupture	do...	.144
Reduction in area after rupture, per cent of original section		44.6
Position of rupture		1″.21 from neck
Character of broken surface		silky trace of granulation
Elongation of inch sections		″.21*, ″.27*, ″11

JACKET.

No. 7154.

Marks, $^{A\ 35\text{-}5\ J}_{B_1}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001300	.000333	0.	....	
46,000	.001533	.000233	0.	....	
50,000	.001667	.000134	....	....	
51,000	.001700	.000033	....	....	Elastic limit.
52,000	.002000	.000300	....	....	
53,000	.003000	.001000	....	....	
54,000	.004000	.001000	....	....	
55,000	.004667	.000667	....	....	
56,000	.006000	.001333	....	....	
92,840	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	92,840
Elastic limit per square inch of original section ....do...	51,000
Elongation per inch after rupture ....inch....	.1867
Elongation per inch under strain at elastic limit ....do...	.001700
Reduction in diameter at point of rupture ....do...	.154
Reduction in area after rupture, per cent of original section	47.2
Position of rupture	1″.4 from neck
Character of broken surface	silky
Elongation of inch sections	″.12, ″.34*, ″.10

JACKET.

No. 7120.

Marks, $\overset{\text{A 20-5 J}}{\text{B}_3}$

Diameter, ".564.

Sectional area, .25 square inch.

Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000200	.000133	....	....	
20,000	.000533	.000333	....	....	
30,000	.000867	.000334	....	....	
40,000	.001200	.000333	0.	....	
46,000	.001467	.000267	0.	....	
51,000	.001667	.000200	....	....	
52,000	.001700	.000033	....	....	Elastic limit.
53,000	.002967	.001267	....	....	
54,000	.005000	.002033	....	....	
55,000	.006000	.001000	....	....	
56,000	.007000	.001000	....	....	
57,000	.007733	.000733	....	....	
93,560	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	93,560
Elastic limit per square inch of original section	do	52,000
Elongation per inch after rupture	inch	.2133
Elongation per inch under strain at elastic limit	do	.001700
Reduction in diameter at point of rupture	do	.154
Reduction in area after rupture, per cent of original section		47.2
Position of rupture		at middle of stem
Character of broken surface		silky
Elongation of inch sections		".14, ".39*, ".11

TABULATION OF TENSION SPECIMENS FROM 5-INCH B. L. SIEGE RIFLES (STEMS OF SPECIMENS FROM TUBES 2" LONG, ".505 DIAMETER).

No. of test.	Position in gun.	Location of specimens.	Elastic limit per square inch.	Tensile strength per square inch.	Elongation.	Contraction of area.	Appearance of fracture.	Remarks.
			Pounds.	*Pounds.*	*Pr. ct.*	*Pr. ct.*		
6442	Tube	Middle .	44,000	87,000	23.0	46.2	Silky................	Muzzle end.
7153	....do	....	56,000	94,500	18.0	37.1	Silky, trace of granulation.	Do.

STEMS OF SPECIMENS FROM JACKETS 3" LONG, ".564 DIAMETER.

6512	Jacket...	Middle .	52,000	99,640	19.7	41.6	Silky, trace of granulation.	Breech end.
7154	....do	....	51,000	92,840	18.7	47.2	Silky................	Do.
7120	....do	....	52,000	93,560	21.3	47.2	....do................	Do.

6-INCH R. F. GUNS.

SPECIMENS FROM TUBE AND JACKET.

TUBE.

No. 7179.

Marks, $\begin{matrix}6\ R\ F_5\ T\\ M\ T_2\ M\end{matrix}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00035	.00020	....	....	
20,000	.00065	.00030	....	....	
30,000	.00100	.00035	....	....	
35,000	.00115	.00015	0.	....	
40,000	.00135	.00020	....	....	
42,000	.00145	.00010	0.	....	
50,000	.00170	.00025	....	....	
52,000	.00180	.00010	....	....	
53,000	.00185	.00005	....	....	Elastic limit.
54,000	.00255	.00070	....	....	
55,000	.00400	.00145	....	....	
56,000	.00600	.00200	....	....	
57,000	.00710	.00110	....	....	
58,000	.00850	.00140	....	....	
91,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	91,900
Elastic limit per square inch of original section	do...	53,000
Elongation per inch after rupture	inch..	.2650
Elongation per inch under strain at elastic limit	do...	.00185
Reduction in diameter at point of rupture	do...	.145
Reduction in area after rupture, per cent of original section		49.1
Position of rupture		1″.10 from neck
Character of broken surface		silky
Elongation of inch sections		″.19, ″.34*

JACKET.

No. 7184.

Marks, $\genfrac{}{}{0pt}{}{6\ R\ F_{8}\ J}{M\ T_{1}\ O}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000133	.000133	0.	....	
10,000	.000333	.000200	....	....	
20,000	.000700	.000367	....	....	
30,000	.001100	.000400	....	....	
40,000	.001533	.000433	.000033	.000033	
46,000	.001700	.000167	.000067	.000034	
50,000	.001867	.000167	....	....	
55,000	.002067	.000200	....	....	
56,000	.002133	.000066	....	....	Elastic limit.
57,000	.002233	.000100	....	....	
58,000	.002333	.000100	....	....	
59,000	.002500	.000167	....	....	
60,000	.002800	.000300	....	....	
61,000	.003067	.000267	....	....	
62,000	.003833	.000766	....	....	
63,000	.004833	.001000	....	....	
64,000	.005900	.001067	....	....	
98,320	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	98,320
Elastic limit per square inch of original section	do...	56,000
Elongation per inch after rupture	inch..	.2033
Elongation per inch under strain at elastic limit	do...	.002133
Reduction in diameter at point of rupture	do...	.154
Reduction in area after rupture, per cent of original section		47.2
Position of rupture		1″.70 from neck
Character of broken surface		silky, trace of granulation
Elongation of inch sections		″.12, ″.37*, ″.12

7-INCH B. L. SIEGE MORTARS.

SPECIMENS FROM STEEL BODIES.

BODY.

No. 6711.

Marks, $\genfrac{}{}{0pt}{}{15962\ B_1\ F_1}{M\ T_2\ M}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	....	....	
10,000	.000300	.000200	....	....	
20,000	.000667	.000367	....	....	
30,000	.001000	.000333	....	....	
35,000	.001200	.000200	....	....	
40,000	.001367	.000167	....	....	
42,000	.001467	.000100	0.	....	
47,000	.001667	.000200	....	....	
48,000	.001733	.000066	....	....	Elastic limit.
49,000	.005333	.003600	....	....	
50,000	.009333	.004000	....	....	
51,000	.010333	.001000	....	....	
52,000	.011000	.000667	....	....	
53,000	.011833	.000833	....	....	
90,840	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	90,840
Elastic limit per square inch of original section	do...	48,000
Elongation per inch after rupture	inch..	.2000
Elongation per inch under strain at elastic limit	do...	.001733
Reduction in diameter at point of rupture	do...	.114
Reduction in area after rupture, per cent of original section		36.4
Position of rupture		1″.15 from neck
Character of broken surface		silky, trace of granulation
Elongation of inch sections		″.13, ″.21*, ″.26*

BODY.

No. 6778.

Marks, $^{15362\ B_2\ F_1}_{BT_2\ M}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000133	.000133	0.	....	
10,000	.000333	.000200	....	....	
20,000	.000667	.000334	....	....	
30,000	.001000	.000333	....	....	
35,000	.001200	.000200	0.	....	
40,000	.001400	.000200	....	....	
42,000	.001467	.000067	0.	....	
47,000	.001633	.000166	....	....	
48,000	.001667	.000034	....	....	Elastic limit.
49,000	.001967	.000300	....	....	
50,000	.003333	.001366	....	....	
51,000	.004267	.000934	....	....	
52,000	.005267	.001000	....	....	
53,000	.006067	.000800	....	....	
94,160	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	94,160
Elastic limit per square inch of original section ....do...	48,000
Elongation per inch after rupture ....inch..	.2067
Elongation per inch under strain at elastic limit ....do...	.001667
Reduction in diameter at point of rupture............do...	.144
Reduction in area after rupture, per cent of original section............	44.6
Position of rupture............	1.″5 from neck
Character of broken surface	silky
Elongation of inch sections............	″.16, ″.33*, ″.13

BODY.

No. 6869.

Marks, $\frac{\text{7 M R}_a}{\text{M T, O}}$ G B
Diameter, ".564.
Sectional area, .25 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.000933	.000300	....	....	
35,000	.001100	.000167	0.	....	
40,000	.001267	.000167	....	....	
42,000	.001333	.000066	0.	....	
48,000	.001533	.000200	....	....	
49,000	.001567	.000034	....	....	
50,000	.001633	.000066	....	....	Elastic limit.
51,000	.004000	.002367	....	....	
52,000	.006500	.002500	....	....	
53,000	.007000	.000500	....	....	
54,000	.007833	.000833	....	....	
55,000	.009167	.001334	....	....	
88,960	....	....	....	....	Tensile strength.

General summary.

Tensile strength, per square inch of original section	pounds..	88,960
Elastic limit, per square inch of original section	do...	50,000
Elongation per inch after rupture	inch..	.2100
Elongation per inch under strain at elastic limit	do...	.001633
Reduction in diameter at point of rupture	do...	.164
Reduction in area after rupture, per cent of original section		49.7
Position of rupture		at middle of stem
Character of broken surface		silky
Elongation of inch sections		".12, ".38*, ".13

BODY.

No. 6870.

Marks, $\substack{7\,\mathrm{M\,R_{4}\,G\,B} \\ \mathrm{M\,T_1\,O}}$

Diameter, ″.564.

Sectional area, .25 square inch.

Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	....	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.001000	.000367	....	....	
35,000	.001200	.000200	0.	....	
40,000	.001367	.000167	....	....	
42,000	.001433	.000066	0.	....	
50,000	.001700	.000267	....	....	
56,000	.001933	.000233	....	....	
57,000	.001967	.000034	....	....	Elastic limit.
58,000	.002933	.000966	....	....	
59,000	.004500	.001567	....	....	
60,000	.005833	.001333	....	....	
61,000	.006500	.000667	....	....	
62,000	.007667	.001167	....	....	
96,480	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	96,480
Elastic limit per square inch of original section	do...	57,000
Elongation per inch after rupture	inch..	.1833
Elongation per inch under strain at elastic limit	do...	.001967
Reduction in diameter at point of rupture	do...	.134
Reduction in area after rupture, per cent of original section		41.9
Position of rupture		″.9 from neck
Character of broken surface		silky, 60 per cent of surface interspersed with fine granulation
Elongation of inch sections		″.11, ″.15, ″.29

TABULATION OF TENSION SPECIMENS FROM STEEL BODIES FOR 7-INCH B. L. SIEGE MORTARS (STEMS 3″ LONG, ″.564 DIAMETER).

No. of test.	Position in gun.	Location of specimens.	Elastic limit per square inch.	Tensile strength per square inch.	Elongation.	Contraction of area.	Appearance of fracture.	Remarks.
			Pounds.	*Pounds.*	*Pr. ct.*	*Pr. ct.*		
6711	Body ...	Middle ...	48,000	90,840	20.0	36.4	Silky; trace of granulation.	Muzzle end.
6778	....do ...	.....do	48,000	94,160	20.7	44.6	Silky...............	Breech end.
6869	....do ...	Outside...	50,000	88,960	21.0	49.7	.....do.............	Muzzle end.
6870	....do ...	.....do	57,000	96,480	18.3	41.9	Silky, 60 per cent of surface interspersed with fine granulation.	Do.

7-INCH B. L. SIEGE HOWITZERS.

SPECIMENS FROM TUBES AND JACKETS

TUBE.

No. 6496.

Marks, $\overset{7\ \text{H}_2\ \text{T}}{\text{M}\ \text{T}_1\ \text{M}}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00025	.00015	....	....	
20,000	.00055	.00030	....	....	
30,000	.00095	.00040	....	....	
35,000	.00110	.00015	0.	....	
40,000	.00125	.00015	....	....	
42,000	.00130	.00005	.00005	.00005	
50,000	.00160	.00030	....	....	
51,000	.00165	.00005	....	....	Elastic limit.
52,000	.00180	.00015	....	....	
53,000	.00490	.00310	....	....	
54,000	.00700	.00210	....	....	
55,000	.00800	.00100	....	....	
56,000	.00900	.00100	....	....	
88,450	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	88,450
Elastic limit per square inch of original section	do...	51,000
Elongation per inch after rupture	inch..	.2350
Elongation per inch under strain at elastic limit	do...	.00165
Reduction in diameter at point of rupture	do...	.155
Reduction in area after rupture, per cent of original section		51.9
Position of rupture		at middle of stem
Character of broken surface		silky
Elongation of inch sections		".26,* ".21

TUBE.

No. 6509.

Marks, $\begin{smallmatrix}7\,H_{22}\,T\\ B\,T_3\,M\end{smallmatrix}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	
30,000	.00100	.00035	....	....	
35,000	.00110	.00010	0.	....	
40,000	.00130	.00020	....	....	
42,000	.00140	.00010	0.	....	
45,000	.00150	.00010	....	....	
46,000	.00155	.00005	....	....	
47,000	.00160	.00005	....	....	Elastic limit.
48,000	.00185	.00025	....	....	
49,000	.00350	.00165	....	....	
50,000	.00550	.00200	....	....	
51,000	.00665	.00115	....	....	
52,000	.00760	.00095	....	....	
86,950	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	86,950
Elastic limit per square inch of original section	do...	47,000
Elongation per inch after rupture	inch..	.2550
Elongation per inch under strain at elastic limit	do...	.00160
Reduction in diameter at point of rupture	do...	.155
Reduction in area after rupture, per cent of original section		51.9
Position of rupture		″.7 from neck
Character of broken surface		fine silky
Elongation of inch sections		″.14, ″.37

TUBE.

No. 6732.

Marks, 14904 B, B T, M

Diameter, ".505.

Sectional area, .20 square inch.

Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	
5,000	.00010	.00010	0.	....	
10,000	.00085	.00025	....	....	
20,000	.00060	.00025	....	....	
30,000	.00100	.00040	....	....	
35,000	.00125	.00025	0.	....	
40,000	.00145	.00020	....	....	
42,000	.00150	.00005	0.	....	
43,000	.00155	.00005	....	....	Elastic limit.
44,000	.00950	.00795	....	....	
45,000	.01125	.00175	....	....	
46,000	.01200	.00075	....	....	
47,000	.01285	.00085	....	....	
48,000	.01400	.00115	....	....	
81,600	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	81,600
Elastic limit per square inch of original section	do...	43,000
Elongation per inch after rupture	inch..	.3050
Elongation per inch under strain at elastic limit	do...	.00155
Reduction in diameter at point of rupture	do...	145
Reduction of area after rupture, per cent of original section		49.1
Position of rupture		1".2 from neck
Character of broken surface		silky
Elongation of inch sections		".23, ".38*

TUBE.

No. 7121.

Marks, $\overset{\text{A 131-7 T}}{\text{M}_1}$
Diameter, ".504.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00060	.00025	....	....	
30,000	.00100	.00040	....	....	
35,000	.00120	.00020	0.	....	
40,000	.00145	.00025	....	....	
42,000	.00150	.00005	0.	....	
48,000	.00170	.00020	....	....	Elastic limit.
49,000	.01200	.01030	....	....	
50,000	.01250	.00050	....	....	
51,000	.01300	.00050	....	....	
52,000	.01575	.00275	....	....	
53,000	.01675	.00100	....	....	
82,050	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	82,050
Elastic limit per square inch of original section	do...	48,000
Elongation per inch after rupture	inch..	.2700
Elongation per inch under strain at elastic limit	do...	.00170
Reduction in diameter at point of rupture	do...	.154
Reduction in area after rupture, per cent of original section		51.9
Position of rupture		".9 from neck
Character of broken surface		silky
Elongation of inch sections		".15, ".39

JACKET.

No. 6501.

Marks, $\overset{14816\ B_2\ F_1}{B\ T_2\ M}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000133	.000133	0.	....	
10,000	.000333	.000200	....	....	
20,000	.000667	.000334	....	....	
30,000	.001000	.000333	....	....	
40,000	.001333	.000333	0.	....	
46,000	.001567	.000234	0.	....	
47,000	.001633	.000066	....	....	Elastic limit.
48,000	.001800	.000167	....	....	
49,000	.002000	.000200	....	....	
50,000	.002300	.000300	....	....	
51,000	.002600	.000300	....	....	
52;000	.003033	.000433	....	....	
100,720	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	100,720
Elastic limit per square inch of original section	do...	47,000
Elongation per inch after rupture	inch..	.1400
Elongation per inch under strain at elastic limit	do...	.001633
Reduction in diameter at point of rupture	do...	.114
Reduction in area after rupture, per cent of original section		86.4
Position of rupture		1″ from neck
Character of broken surface		granular 60 per cent, silky 40 per cent
Elongation of inch sections		″.25*, ″.10, ″.07

JACKET.

No. 6510.

Marks, $\substack{7\,H_{a}\,J \\ M\,T_{1}\,O}$
Diameter, ".564.
Sectional area, .25 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000133	.000133	0.	....	
10,000	.000300	.000167	....	....	
20,000	.000667	.000367	....	....	
30,000	.001033	.000366	....	....	
40,000	001300	.000267	0.	....	
46,000	.001533	.000233	0.	....	
50,000	.001733	.000200	....	....	
56,000	.001967	.000234	....	....	
57,000	.002000	.000033	....	....	Elastic limit.
58,000	.002200	.000200	....	....	
59,000	.002500	.000300	....	....	
60,000	.003333	.000833	....	....	
61,000	.004333	.001000	....	....	
62,000	.005833	.001500	....	....	
98,880	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	98,880
Elastic limit per square inch of original section	do...	57,000
Elongation per inch after rupture	inch..	.1767
Elongation per inch under strain at elastic limit	do...	.002000
Reduction in diameter at point of rupture	do...	.154
Reduction in area after rupture, per cent of original section		47.2
Position of rupture		".5 from neck
Character of broken surface		fine silky
Elongation of inch sections		".09, ".12, ".32 *

JACKET.

No. 6511.

Marks, $\overset{7}{M}\,\overset{H_{s}}{T_{1}}\,\overset{J}{O}$

Diameter, ″.564.

Sectional area, .25 square inch.

Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000267	.000167	....	....	
20,000	.000633	.000366	....	....	
30,000	.000967	.000334	....	....	
40,000	.001300	.000333	0.	....	
46,000	.001500	.000200	0.	....	
50,000	.001667	.000167	....	....	
55,000	.001833	.000166	....	....	
58,000	.001967	.000134	....	....	
59,000	.002000	.000033	....	....	Elastic limit.
60,000	.004167	.002167	....	....	
61,000	.006667	.002500	....	....	
62,000	.008100	.001433	....	....	
63,000	.008700	.000600	....	....	
64,000	.009800	.001100	....	....	
97,440	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	97,440
Elastic limit per square inch of original section ....do...	59,000
Elongation per inch after rupture ....inch..	.2300
Elongation per inch under strain at elastic limit ....do...	.002000
Reduction in diameter at point of rupture ....do...	.164
Reduction in area after rupture, per cent of original section	49.7
Position of rupture	at middle of stem
Character of broken surface	fine silky
Elongation of inch sections	″.15,″.40*,″.14

JACKET.

No. 6722.

Marks, $\genfrac{}{}{0pt}{}{14816\ B_3\ F_2}{B\ T_2\ M}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000667	.000367	....	....	
30,000	.001000	.000333	....	....	
40,000	.001333	.000333	0.	....	
46,000	.001567	.000234	0.	....	
50,000	.001700	.000133	....	....	Elastic limit.
51,000	.001933	.000233	....	....	
52,000	.003033	.001100	....	....	
53,000	.003767	.000734	....	....	
54,000	.004667	.000900	....	....	
55,000	.005267	.000600	....	....	
97,600	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	97,600
Elastic limit per square inch of original section	do...	50,000
Elongation per inch after rupture	inch..	.0700
Elongation per inch under strain at elastic limit	do...	.001700
Reduction in diameter at point of rupture	do...	.014
Reduction in area after rupture, per cent of original section		5.0
Position of rupture		″.4 from neck
Character of broken surface		fine granular
Elongation of inch sections		″.06, ″.07, ″.08*

JACKET.

No. 6790.

Marks, $^{14816\ B_2\ F_1}_{B\ T_2\ M}$
Diameter, ".564.
Sectional area, .25 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000333	.000233	....	....	
20,000	.000667	.000334	....	....	
30,000	.001000	.000333	....	....	
40,000	.001367	.000367	0.	....	
46,000	.001600	.000233	0.	....	
47,000	.001667	.000067	....	....	
48,000	.001700	.000033	....	....	Elastic limit.
49,000	.005333	.003633	....	....	
50,000	.006500	.001167	....	....	
51,000	.007333	.000833	....	....	
52,000	.008333	.001000	....	....	
53,000	.009100	.000767	....	....	
92,360	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	92,360
Elastic limit per square inch of original section	do...	48,000
Elongation per inch after rupture	inch..	.1967
Elongation per inch under strain at elastic limit	do...	.001700
Reduction in diameter at point of rupture	do...	.065
Reduction in area after rupture, per cent of original section		30.7
Position of rupture		1".6 from neck
Character of broken surface		silky, trace of granulation
Elongation of inch sections		".12, ".33*, ".14

JACKET.

No. 7135.

Marks, $\frac{A}{B_1}{}^{18\text{–}J_7}$
Diameter, ".564.
Sectional area, .25 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000167	.000167	0.	....	
10,000	.000367	.000200	....	....	
20,000	.000733	.000366	....	....	
30,000	.001100	.000367	....	....	
40,000	.001433	.000333	.000033	.000033	
46,000	.001667	.000234	.000033	0.	
50,000	.001800	.000133	....	....	
52,000	.001867	.000067	....	....	
54,000	.001967	.000100	....	....	
55,000	.002033	.000066	....	....	Elastic limit.
56,000	.003033	.001000	....	....	
57,000	.003933	.000900	....	....	
58,000	.006467	.002534	....	....	
59,000	.007167	.000700	....	....	
60,000	.008400	.001233	....	....	
91,960	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	91,960
Elastic limit per square inch of original section ....do...	55,000
Elongation per inch after rupture ....inch..	.2133
Elongation per inch under strain at elastic limit ....do...	.002033
Reduction in diameter at point of rupture ....do...	.174
Reduction in area after rupture, per cent of original section	52.2
Position of rupture	".75 from neck
Character of broken surface	silky
Elongation of inch sections	".35*, ".16, ".13

TABULATION OF TENSION SPECIMENS FROM 7-INCH B. L. SIEGE HOWITZERS.

STEMS OF SPECIMENS FROM TUBES 3" LONG, ".564 DIAMETER.

No. of test.	Position in gun.	Location of specimen.	Elastic limit per square inch.	Tensile strength per square inch.	Elongation.	Contraction of area.	Appearance of fracture.	Remarks.
			Pounds.	*Pounds.*	*Per ct.*	*Per ct.*		
6496	Tubes ...	Middle ..	51,000	88,450	23.5	51.9	Silky...............	Muzzle end.
6509	....do ...	....do	47,000	86,950	25.5	51.9	Fine silky..........	Breech end.
6732	....do ...	....do	43,000	81,600	30.5	49.1	Silky...............	Do.
7121	....do ...	....	48,000	82,050	27.0	51.9	.....do.............	Muzzle end.

STEMS OF SPECIMENS FROM JACKETS 3" LONG, ".564 DIAMETER.

6501	Jacket...	Middle ..	47,000	100,720	14.0	36.4	Granular, 60 per cent; silky, 40 per cent.	Breech end.
6510	....do	Outside..	57,000	98,880	17.7	47.2	Fine silky..........	Muzzle end.
6511	....do	....do	59,000	97,440	23.0	49.7	.....do.............	Do.
6722	....do	Middle ..	50,000	97,600	7.0	5.0	Fine granular......	Breech end.
6790	....do	....do	48,000	92,360	19.7	30.7	Silky, trace of granulation.	Do.
7135	....do	....	55,000	91,960	21.3	52.2	Silky...............	Do.

10-INCH STEEL B. L. RIFLES.

SPECIMENS FROM TUBES AND JACKETS.

TUBE.

No. 6777.

Marks, $\genfrac{}{}{0pt}{}{15017\ B_1}{B\ T_2\ M}$.
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000333	.000233	....	....	
20,000	.000667	.000334	....	....	
30,000	.001033	.000366	....	....	
35,000	.001200	.000167	0.	....	
40,000	.001367	.000167	....	....	
42,000	.001433	.000066	0.	....	
45,000	.001567	.000134	....	....	
46,000	.001633	.000066	....	....	Elastic limit.
47,000	.002333	.000700	....	....	
48,000	.004500	.002167	....	....	
49,000	.005667	.001167	....	....	
50,000	.006667	.001000	....	....	
51,000	.007667	.001000	....	....	
86,160	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	86,160
Elastic limit per square inch of original section	do...	46,000
Elongation per inch after rupture	inch..	.2300
Elongation per inch under strain at elastic limit	do...	.001633
Reduction in diameter at point of rupture	do...	.134
Reduction in area after rupture, per cent of original section		41.9
Position of rupture		at middle of stem
Character of broken surface		silky
Elongation of inch sections		″.15, ″.38*, ″.16

10-INCH [illegible]

[illegible]

No. [illegible]

Marks, $\overset{15017\ B_1}{B\,T_2\,M}$
Diameter, ".564.
Sectional area, .25 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Perman[illegible]	[illegible]
Pounds.	Inch.	Inch.	[illegible]	[illegible]
1,000	0.	0.		
5,000	.000100	[illegible]		
10,000	.000333	[illegible]		
20,000	.000667	[illegible]		
30,000	.001033	[illegible]		
35,000	.001200	[illegible]		
40,000	.001267	[illegible]		
42,000	.001433	[illegible]		
45,000	.001567	[illegible]		
46,000	.001633	[illegible]		
47,000	.002233	[illegible]		
48,000	.004500	[illegible]		
49,000	.005667	[illegible]		
50,000	.006667	[illegible]		
51,000	.007667	[illegible]		
86,160				

[illegible]

Tensile strength per square inch of [illegible] ...nds..	94,480
Elastic limit per square inch of [illegible] ...do...	48,000
Elongation per inch after rupture ...inch..	.1767
Elongation per inch under strain at [illegible] ...do...	.001667
Reduction in diameter at point of rupture ...do...	.124
Reduction in area after rupture, per cent	39.2
Position of rupture	at middle of stem
Character of broken surface	[illegible]ranular 55 per cent
Elongation of inch sections	".18, ".31*, ".09

TUBE.

No. 6987.

Marks, $\overset{7855\ B.}{M\ T.\ M}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000333	.000233	....	....	
20,000	.000667	.000334	....	....	
30,000	.001033	.000366	....	....	
35,000	.001200	.000167	0.	....	
40,000	.001400	.000200	0.	....	
44,000	.001467	.000067	....	....	
45,000	.001533	.000066	....	....	Elastic limit.
46,000	.001933	.000400	....	....	
47,000	.002500	.000567	....	....	
48,000	.005333	.002833	....	....	
49,000	.006333	.001000	....	....	
50,000	.007000	.000667	....	....	
91,680	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	91,680
Elastic limit per square inch of original section	do...	45,000
Elongation per inch after rupture	inch..	.2167
Elongation per inch under strain at elastic limit	do...	.001533
Reduction in diameter at point of rupture	do...	.144
Reduction in area after rupture, per cent of original section		44.6
Position of rupture		1″.25 from neck
Character of broken surface		silky
Elongation of inch sections		″.14, ″.28*, ″.23*

JACKET.

No. 6744.

Marks, $\overset{15046\ B_1\ F_1}{B\ T_2\ M}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000333	.000266	....	....	
20,000	.000667	.000334	....	....	
30,000	.001000	.000333	....	....	
35,000	.001167	.000167	0.	....	
40,000	.001333	.000166	....	....	
42,000	.001400	.000067	0.	....	
48,000	.001667	.000267	....	....	Elastic limit.
49,000	.002667	.001000	....	....	
50,000	.004033	.001366	....	....	
51,000	.004700	.000667	....	....	
52,000	.005500	.000800	....	....	
53,000	.006067	.000567	....	....	
94,480	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	94,480
Elastic limit per square inch of original section	do...	48,000
Elongation per inch after rupture	inch..	.1767
Elongation per inch under strain at elastic limit	do...	.001667
Reduction in diameter at point of rupture	do...	.124
Reduction in area after rupture, per cent of original section		39.2
Position of rupture		at middle of stem
Character of broken surface		silky 45 per cent, granular 55 per cent
Elongation of inch sections		″.13, ″.31*, ″.09

JACKET.

No. 7010.

Marks, $^{10805\ B}_{M\ T,\ M}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.001000	.000367	....	....	
35,000	.001167	.000167	0.	....	
40,000	.001333	.000166	....	....	
42,000	.001400	.000067	0.	....	
47,000	.001567	.000167	....	....	Elastic limit.
48,000	.001700	.000133	....	....	
49,000	.003667	.001967	....	....	
50,000	.005333	.001666	....	....	
51,000	.006333	.001000	....	....	
52,000	.007333	.001000	....	....	
91,360	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	91,360
Elastic limit per square inch of original section	do...	47,000
Elongation per inch after rupture	inch..	.2233
Elongation per inch under strain at elastic limit	do...	.001567
Reduction in diameter at point of rupture	do...	.154
Reduction in area after rupture, per cent of original section		47.2
Position of rupture		at middle of stem
Character of broken surface		silky
Elongation of inch sections		″.14, ″.39, ″.14

TABULATION OF TENSION SPECIMENS FROM 10-INCH STEEL B. L. RIFLES (STEMS 3″ LONG, ″.564 DIAMETER).

No. of test.	Position in gun.	Location of specimens.	Elastic limit per square inch.	Tensile strength per square inch.	Elongation.	Contraction of area.	Appearance of fracture.	Remarks.
			Pounds	*Pounds.*	*Per ct.*	*Per ct.*		
6777	Tube	Middle .	46,000	86,160	23.0	41.9	Silky................	Breech end.
6987	....do	....do ...	45,000	91,680	21.7	44.6	.....do...............	Muzzle end.
6744	Jacket...	....do ...	48,000	94,480	17.7	39.2	Silky, 45 per cent; granular, 55 per cent.	Breech end.
7010	....do	....do...	47,000	91,360	22.3	47.2	Silky................	Muzzle end.

12-INCH STEEL B. L. RIFLES.

SPECIMENS FROM TUBE AND JACKET.

TUBE.

No. 6763.

Marks, $\overset{12\ R_8\ T}{M\ T_1\ O}$
Diameter, .″564.
Sectional area .25 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	....	....	
10,000	.000267	.000200	....	....	
20,000	.000600	.000333	....	....	
30,000	.000933	.000333	....	....	
35,000	.001100	.000167	....	....	
40,000	.001500	.000400	.000233	.000233	Elastic limit.
41,000	.002100	.000600	....	....	
42,000	.003267	.001167	....	....	
43,000	.003900	.000633	....	....	
44,000	.005000	.001100	....	....	
45,000	.007833	.002833	....	....	
88,760	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	88,760
Elastic limit per square inch of original section	do...	40,000
Elongation per inch after rupture	inch..	.2333
Elongation per inch under strain at elastic limit	do...	.001500
Reduction in diameter at point of rupture	do...	.134
Reduction in area after rupture, per cent of original section		41.9
Position of rupture		″.9 from neck
Character of broken surface		silky, trace of granulation
Elongation of inch sections		″.18, ″.18, ″34*

JACKET.

No. 6731.

Marks, $\begin{matrix}12\ R_{46}\ J\\ M\ T_1\ O\end{matrix}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
35,000	.001133	.000166	0.	....	
40,000	.001300	.000167	....	....	
42,000	.001367	.000067	0.	....	
50,000	.001667	.000300	....	....	
51,000	.001700	.000033	....	....	Elastic limit.
52,000	.004667	.002967	....	....	
53,000	.006333	.001666	....	....	
54,000	.008833	.002500	....	....	
55,000	.009333	.000500	....	....	
56,000	.010667	.001334	....	....	
88,400	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	88,400
Elastic limit per square inch of original section	do...	51,000
Elongation per inch after rupture	inch..	.2000
Elongation per inch under strain at elastic limit	do...	.001700
Reduction in diameter at point of rupture	do...	.174
Reduction in area after rupture, per cent of original section		52.2
Position of rupture		″.9 from neck
Character of broken surface		silky, cup shaped
Elongation of inch sections		″.09, ″.12, ″.39*

12-INCH B. L. RIFLED MORTARS.

SPECIMENS FROM TUBES AND JACKETS.

TUBE.

No. 6576.

Marks, $\overset{14823\ B_3}{B\ T_2\ M}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000333	.000233	....	....	
20,000	.000667	.000334	....	....	
30,000	.001000	.000333	....	....	
35,000	.001167	.000167	0.	....	
40,000	.001333	.000166	....	....	
42,000	.001400	.000067	0.	....	
46,000	.001567	.000167	....	....	
47,000	.001600	.000033	....	....	
48,000	.001667	.000067	....	....	
49,000	.001700	.000033	....	....	Elastic limit.
50,000	.002600	.000900	....	....	
51,000	.002733	.000133	....	....	
52,000	.003633	.000900	....	....	
53,000	.005000	.001367	....	....	
54,000	.006033	.001033	....	....	
92,480	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	92,480
Elastic limit per square inch of original section	do...	49,000
Elongation per inch after rupture	inch..	.1867
Elongation per inch under strain at elastic limit	do...	.001700
Reduction in diameter at point of rupture	do...	.154
Reduction in area after rupture, per cent of original section		47.2
Position of rupture		″.5 from neck
Character of broken surface		silky
Elongation of inch sections		″.35*, ″.11, ″.10

TUBE.

No. 6613.

Marks, $\frac{12\ M\ R_{34}\ T}{B\ T_1\ O}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000133	.000066	....	....	
20,000	.000467	.000334	....	....	
30,000	.000800	.000333	....	....	
35,000	.001067	.000267	0.	....	
40,000	.001200	.000133	0.	....	
50,000	.001733	.000533	....	....	
51,000	.001800	.000067	....	....	Elastic limit.
52,000	.001933	.000133	....	....	
53,000	.002067	.000134	....	....	
54,000	.002433	.000366	....	....	
55,000	.002800	.000367	....	....	
56,000	.004133	.001333	....	....	
57,000	.004933	.000800	....	....	
92,400	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	92,400
Elastic limit per square inch of original section	do	51,000
Elongation per inch after rupture	inch	.2200
Elongation per inch under strain at elastic limit	do	.001800
Reduction in diameter at point of rupture	do	.154
Reduction in area after rupture, per cent of original section		47.2
Position of rupture		1″.5 from neck
Character of broken surface		silky
Elongation of inch sections		″.17, ″.33*, ″.11

TUBE.

No. 6614.

Marks, $\substack{12\ M\ R_{86}\ T \\ B\ T_1\ O}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000233	.000133	....	....	
20,000	.000500	.000267	....	....	
30,000	.000833	.000333	....	....	
35,000	.001000	.000167	0.	....	
40,000	.001233	.000233	.000033	.000033	
48,000	.001467	.000234	....	....	Elastic limit.
49,000	.001633	.000166	....	....	
50,000	.001733	.000100	....	....	
51,000	.001833	.000100	....	....	
52,000	.002667	.000834	....	....	
53,000	.004067	.001400	....	....	
54,000	.005400	.001333	....	....	
89,240	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	89,240
Elastic limit per square inch of original section	do...	48,000
Elongation per inch after rupture	inch..	.2200
Elongation per inch under strain at elastic limit	do...	.001467
Reduction in diameter at point of rupture	do...	.174
Reduction in area after rupture, per cent of original section		52.2
Position of rupture		1″.1 from neck
Character of broken surface		silky
Elongation of inch sections		″.12, ″.20, ″.34*

TUBE.

No. 6651.

Marks, $\frac{12\ M\ R_{86}\ T}{M\ T_1\ O}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.001000	.000367	....	....	
35,000	.001200	.000200	0.	....	
38,000	.001333	.000133	....	....	
39,000	.001400	.000067	....	....	Elastic limit.
40,000	.001800	.000400	....	....	
41,000	.001900	.000100	....	....	
42,000	.002033	.000133	.000633	.000633	
43,000	.002133	.000100	....	....	
44,000	.002233	.000100	....	....	
45,000	.002367	.000134	....	....	
46,000	.002533	.000166	....	....	
47,000	.002667	.000134	....	....	
48,000	.002867	.000200	....	....	
49,000	.003000	.000133	....	....	
50,000	.003267	.000267	....	....	
51,000	.003533	.000266	....	....	
52,000	.003900	.000367	....	....	
90,520	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	90,520
Elastic limit per square inch of original section	do	39,000
Elongation per inch after rupture	inch	.2067
Elongation per inch under strain at elastic limit	do	.001400
Reduction in diameter at point of rupture	do	.164
Reduction in area after rupture, per cent of original section	do	49.7
Position of rupture		1″.1 from neck
Character of broken surface		silky
Elongation of inch sections		″.81*, ″.20, ″.11

TUBE.

No. 6652.

Marks, $^{12\,\mathrm{MR}_{8}\;\mathrm{T}}_{\mathrm{MT}_{1}\,\mathrm{O}}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000333	.000233	....	....	
20,000	.000667	.000334	....	....	
30,000	.001033	.000366	....	....	
35,000	.001200	.000167	0.	....	
40,000	.001367	.000167	0.	....	
48,000	.001667	.000300	....	....	
49,000	.001733	.000066	....	....	
50,000	.001767	.000034	....	....	Elastic limit.
51,000	.001967	.000200	....	....	
52,000	.003500	.001533	....	....	
53,000	.004500	.001000	....	....	
54,000	.007000	.002500	....	....	
55,000	.007333	.000333	....	....	
87,680	....	....	....	....	Tensile strength.

General summary.

Tensile strength, per square inch of original section	pounds..	87,680
Elastic limit, per square inch of original section	do...	50,000
Elongation per inch after rupture	inch..	.2033
Elongation per inch under strain at elastic limit	do...	.001767
Reduction in diameter at point of rupture	do...	.164
Reduction in area after rupture, per cent of original section		49.7
Position of rupture		″.85 from neck
Character of broken surface		silky
Elongation of inch sections		″.38*, ″.14, ″.09

TUBE.

No. 6721.

Marks, 15119 B M T 2M
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
35,000	.001133	.000166	0.	....	
40,000	.001300	.000167	0.	....	
45,000	.001467	.000167	....	....	
46,000	.001533	.000066	....	....	
47,000	.001600	.000067	....	....	
48,000	.001633	.000033	....	....	
49,000	.001667	.000034	....	....	Elastic limit.
50,000	.005500	.003833	....	....	
51,000	.006000	.000500	....	....	
52,000	.006833	.000833	....	....	
53,000	.007333	.000500	....	....	
54,000	.008500	.001167	....	....	
92,400	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	92,400
Elastic limit per square inch of original section ....do...	49,000
Elongation per inch after rupture ....inch..	.2167
Elongation per inch under strain at elastic limit ....do...	.001667
Reduction in diameter at point of rupture ....do...	.144
Reduction in area after rupture, per cent of original section	44.6
Position of rupture	1″ from neck
Character of broken surface	silky
Elongation of inch sections	″.12, ″.18, ″.35*

TUBE.

No. 6764.

Marks, $\overset{15010\ B_1}{B\ T_2\ M}$
Diameter, ".564.
Sectional area, .25 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000667	.000367	....	....	
30,000	.001000	.000333	....	....	
35,000	.001167	.000167	0.	....	
40,000	.001333	.000166	0.	....	
50,000	.001733	.000400	....	....	Elastic limit.
51,000	.002233	.000500	....	....	
52,000	.007833	.005600	....	....	
53,000	.008500	.000667	....	....	
54,000	.009400	.000900	....	....	
55,000	.010333	.000933	....	....	
88,320	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section..........pounds..	88,320
Elastic limit per square inch of original section..........do...	50,000
Elongation per inch after rupture..........inch..	.2467
Elongation per inch under strain at elastic limit..........do...	.001733
Reduction in diameter at point of rupture..........do...	.164
Reduction in area after rupture, per cent of original section..........	49.7
Position of rupture..........	at middle of stem
Character of broken surface..........	silky
Elongation of inch sections..........	".18, ".42*, ".14

TUBE.

No. 6845.

Marks, $\substack{15019\ B_2 \\ B\ T_2\ M}$
Diameter, ″.565.
Sectional area, .25 square inch.
Gauged length, 3″.

Applied load per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
35,000	.001133	.000166	0.	....	
40,000	.001333	.000200	0.	....	
50,000	.001667	.000334	....	....	
51,000	.001700	.000033	....	....	
52,000	.001767	.000067	....	....	Elastic limit.
53,000	.002000	.000233	....	....	
54,000	.002833	.000833	....	....	
55,000	.004333	.001500	....	....	
56,000	.005733	.001400	....	....	
57,000	.006500	.000767	....	....	
98,160	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	98,160
Elastic limit per square inch of original section	do...	52,000
Elongation per inch after rupture	inch..	.1767
Elongation per inch under strain at elastic limit	do...	.001767
Reduction in diameter at point of rupture	do...	.115
Reduction in area after rupture, per cent of original section		86.4
Position of rupture		″.95 from neck
Character of broken surface		granular 60 per cent, silky center 40 per cent
Elongation of inch sections		″.10, ″.15, ″.28*

TUBE.

No. 7148.

Marks, $\overset{15767\ B_2}{B\ T_1\ M}$
Diameter, ".564.
Sectional area, .25 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000133	.000133	0.	....	
10,000	.000333	.000200	....	....	
20,000	.000633	.000300	....	....	
30,000	.001000	.000367	....	....	
35,000	.001167	.000167	0.	....	
40,000	.001333	.000166	0.	....	
43,000	.001467	.000134	....	....	
44,000	.001533	.000066	....	....	Elastic limit.
45,000	.005067	.003534	....	....	
46,000	.005733	.000666	....	....	
47,000	.006667	.000934	....	....	
48,000	.007667	.001000	....	....	
49,000	.008600	.000933	....	....	
85,920	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	85,920
Elastic limit per square inch of original section	do...	44,000
Elongation per inch after rupture	inch..	.2000
Elongation per inch under strain at elastic limit	do...	.001533
Reduction in diameter at point of rupture	do...	.094
Reduction in area after rupture, per cent of original section		30.6
Position of rupture		at middle of the stem
Character of broken surface		granular, with a streak of silky metal extending partly across surface
Elongation of inch sections		".14, ".32*, ".14

JACKET.

No. 6615.

Marks, $\begin{smallmatrix}12\ M\ R_{98}\ J\\ B\ T_1\ O\end{smallmatrix}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	....	....	
10,000	.000200	.000133	....	....	
20,000	.000400	.000200	....	....	
30,000	.000800	.000400	....	....	
35,000	.001033	.000233	0.	....	
40,000	.001200	.000167	....	....	
42,000	.001300	.000100	0.	....	
47,000	.001467	.000167	....	....	
48,000	.001533	.000066	....	....	Elastic limit.
49,000	.001633	.000100	....	....	
50,000	.002000	.000367	....	....	
51,000	.002667	.000667	....	....	
52,000	.004500	.001833	....	....	
53,000	.006333	.001833	....	....	
86,720	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	86,720
Elastic limit per square inch of original section	do...	48,000
Elongation per inch after rupture	inch..	.2000
Elongation per inch under strain at elastic limit	do...	.001533
Reduction in diameter at point of rupture	do...	.174
Reduction in area after rupture, per cent of original section		52.2
Position of rupture		″.85 from neck
Character of broken surface		fine silky, oblique
Elongation of inch sections		″.11, ″.13, ″.36*

JACKET.

No. 6628.

Marks, $\frac{12\ M\ R_{36}\ J}{M\ T_1\ O}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	....	....	
10,000	.000267	.000200	....	....	
20,000	.000600	.000333	....	....	
30,000	.000933	.000333	....	....	
35,000	.001100	.000167	0.	....	
40,000	.001300	.000200	....	....	
42,000	.001367	.000067	....	....	
50,000	.001667	.000300	....	....	
51,000	.001700	.000033	....	....	Elastic limit.
52,000	.002667	.000967	....	....	
53,000	.003833	.001166	....	....	
54,000	.005667	.001834	....	....	
55,000	.006333	.000666	....	....	
56,000	.008000	.001667	....	....	
90,040	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	90,040
Elastic limit per square inch of original section	do...	51,000
Elongation per inch after rupture	inch..	.1933
Elongation per inch under strain at elastic limit	do...	.001700
Reduction in diameter at point of rupture	do...	.144
Reduction in area after rupture, per cent of original section		44.6
Position of rupture		″.8 from neck
Character of broken surface		silky
Elongation of inch sections		″.11, ″.15, ″.32*

JACKET.

No. 6629.

Marks, $\genfrac{}{}{0pt}{}{14981\ B_1}{B\ T_4\ M}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	....	....	
10,000	.000300	.000200	....	....	
20,000	.000667	.000367	....	....	
30,000	.001000	.000333	....	....	
35,000	.001200	.000200	0.	....	
40,000	.001400	.000200	0.	....	
42,000	.001467	.000067	0.	....	
46,000	.001667	.000200	....	....	
47,000	.001700	.000033	....	....	Elastic limit.
48,000	.002000	.000300	....	....	
49,000	.004333	.002333	....	....	
50,000	.007167	.002834	....	....	
51,000	.007667	.000500	....	....	
52,000	.008433	.000766	....	....	
92,080	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	92,080
Elastic limit per square inch of original section	do...	47,000
Elongation per inch after rupture	inch..	.2233
Elongation per inch under strain at elastic limit	do...	.001700
Reduction in diameter at point of rupture	do...	.144
Reduction in area after rupture, per cent of original section		44.6
Position of rupture		″1.5 from neck
Character of broken surface		silky
Elongation of inch sections		″.19, ″.36*, ″.12

JACKET.

No. 6709.

Marks, $\frac{\text{12 MR. J}}{\text{M T, O}}$
Diameter, ".564.
Sectional area, .25 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
35,000	.001100	.000133	....	....	
40,000	.001300	.000200	....	....	
42,000	.001367	.000067	....	....	
50,000	.001633	.000266	0.	....	
55,000	.001800	.000167	....	....	Elastic limit.
56,000	.002000	.000200	....	....	
57,000	.003167	.001167	....	....	
58,000	.005333	.002166	....	....	
59,000	.006433	,001100	....	....	
60,000	.007500	.001067	....	....	
95,240	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	95,240
Elastic limit per square inch of original section	do...	55,000
Elongation per inch after rupture	inch..	.1967
Elongation per inch under strain at elastic limit	do...	.001800
Reduction in diameter at point of rupture	do...	.164
Reduction in area after rupture, per cent of original section		49.7
Position of rupture		1" from neck
Character of broken surface		silky
Elongation of inch sections		".34*, ".16, ".09

JACKET.

No. 6710.

Marks, $\genfrac{}{}{0pt}{}{12\,M\,R_{III}\,J}{M\,T_1\,O}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	....	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.001000	.000367	....	....	
35,000	.001167	.000167	0.	....	
40,000	.001333	.000166	....	....	
42,000	.001400	.000067	....	....	
52,000	.001767	.000367	....	....	
53,000	.001833	.000066	....	....	Elastic limit.
54,000	.002000	.000167	....	....	
55,000	.005833	.003833	....	....	
56,000	.007333	.001500	....	....	
57,000	.008000	.000667	....	....	
58,000	.009333	.001333	....	....	
90,800	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	90,800
Elastic limit per square inch of original section ....do...	53,000
Elongation per inch after rupture ....inch..	.2233
Elongation per inch under strain at elastic limit ....do...	.001833
Reduction in diameter at point of rupture ....do...	.154
Reduction in area after rupture, per cent of original section	47.2
Position of rupture	1″.6 from neck
Character of broken surface	silky
Elongation of inch sections	″.15, ″.39*, ″.13

JACKET.

No. 6756.

Marks, $\overset{15117\ B_1}{B\ T_2\ M}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000333	.000233	....	....	
20,000	.000667	.000334	....	....	
30,000	.001000	.000333	....	....	
35,000	.001200	.000200	0.	....	
40,000	.001367	.000167	....	....	
42,000	.001433	.000066	0.	....	
48,000	.001633	.000200	....	....	Elastic limit.
49,000	.001800	.000167	....	....	
50,000	.001933	.000133	....	....	
51,000	.003333	.001400	....	....	
52,000	.004500	.001167	....	....	
53,000	.005067	.000567	....	....	
96,240	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section....pounds..	96,240
Elastic limit per square inch of original section....do...	48,000
Elongation per inch after rupture....inch..	.2267
Elongation per inch under strain at elastic limit....do...	.001633
Reduction in diameter at point of rupture....do...	.134
Reduction in area after rupture, per cent of original section....	41.9
Position of rupture....	1″.6 from neck
Character of broken surface....	silky
Elongation of inch sections....	″.16, ″.36*, ″.16

JACKET.

No. 6935.

Marks, $\begin{matrix}15115\ B_3\\ B\ T_8\ M\end{matrix}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.		
10,000	.000333	.000233			
20,000	.000667	.000334			
30,000	.001000	.000333			
35,000	.001200	.000200	0.		
40,000	.001400	.000200			
42,000	.001467	.000067	0.		
48,000	.001667	.000200			Elastic limit.
49,000	.001767	.000100			
50,000	.004333	.002566			
51,000	.005033	.000700			
52,000	.006067	.001034			
53,000	.006833	.000766			
92,720					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	92,720
Elastic limit per square inch of original section	do...	48,000
Elongation per inch after rupture	inch..	.1933
Elongation per inch under strain at elastic limit	do...	.001667
Reduction in diameter at point of rupture	do...	.144
Reduction in area after rupture, per cent of original section		44.6
Position of rupture		1″.3 from neck
Character of broken surface		silky
Elongation of inch sections		″.17, ″.28*, ″.13

JACKET.

No. 6936.

Marks, $\frac{15372\ \mathrm{B}_1}{\mathrm{M\ T_3\ M}}$
Diameter, ".564.
Sectional area, .25 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pound.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000333	.000233	....	....	
20,000	.000667	.000334	....	....	
30,000	.001000	.000333	....	....	
35,000	.001200	.000200	0.	....	
40,000	.001367	.000167	....	....	
42,000	.001433	.000066	0.	....	
48,000	.001633	.000200	....	....	Elastic limit.
49,000	.001800	.000167	....	....	
50,000	.003000	.001200	....	....	
51,000	.003400	.000400	....	....	
52,000	.004333	.000933	....	....	
53,000	.005000	.000667	....	....	
98,720	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	98,720
Elastic limit per square inch of original section	do...	48,000
Elongation per inch after rupture	inch..	.1967
Elongation per inch under strain at elastic limit	do...	.001633
Reduction in diameter at point of rupture	do...	.134
Reduction in area after rupture, per cent of original section		41.9
Position of rupture		1".43 from neck
Character of broken surface		silky
Elongation of inch sections		".20, ".29*, ".10

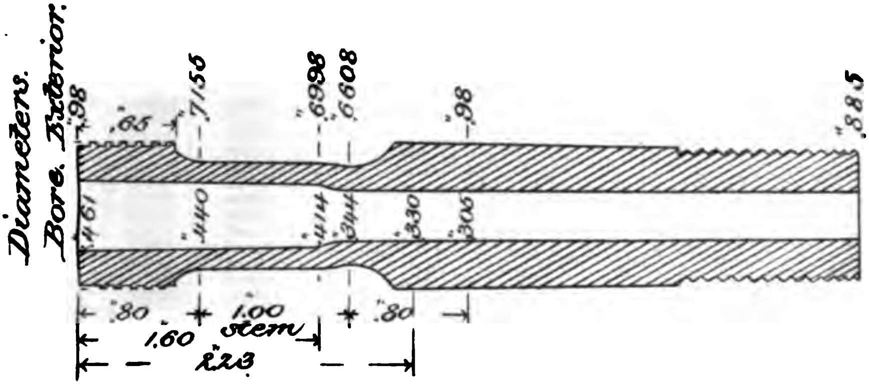
TABULATION OF TENSION SPECIMENS FROM 12-INCH B. L. RIFLED MORTARS (STEMS 3" LONG, ".564 DIAMETER).

No. of test.	Position in gun.	Location of specimens.	Elastic limit per square inch.	Tensile strength per square inch.	Elongation.	Contraction of area.	Appearance of fracture.	Remarks.
			Lbs.	*Lbs.*	*Per ct.*	*Per ct.*		
6576	Tube	Middle ..	49,000	92,480	18.7	47.2	Silky..............	Breech end.
6613	....do....	Outside..	51,000	92,400	22.0	47.2	.....do..............	Do.
6614	....do....	....do....	48,000	89,240	22.0	52.2	.....do..............	Do.
6651	....do....	....do....	39,000	90,520	20.7	49.7	.....do..............	Muzzle end.
6652	....do....	....do....	50,000	87,680	20.3	49.7	.....do..............	Do.
6721	....do....	Middle ..	49,000	92,400	21.7	44.6	.....do..............	Do.
6764	....do....	....do....	50,000	88,520	24.7	49.7	.....do..............	Breech end.
6845	....do....	....do....	52,000	98,160	17.7	36.4	Granular 60 per cent, silky center, 40 per cent.	Do.
7148	....do....	....do....	44,000	85,920	20.0	30.6	Granular with a streak of silky metal extending partly across surface.	Do.
6615	Jacket...	Outside..	48,000	86,720	20.0	52.2	Fine silky, oblique	Do.
6628	....do....	....do....	51,000	90,040	19.3	44.6	Silky..............	Muzzle end.
6629	....do....	Middle ..	47,000	92,080	22.3	44.6	.....do..............	Breech end.
6709	....do....	Outside..	55,000	95,240	19.7	49.7	.....do..............	Muzzle end.
6710	....do....	....do....	58,000	90,800	22.3	47.2	.....do..............	Do.
6756	....do....	Middle ..	48,000	96,240	22.7	41.9	.....do..............	Breech end.
6935	....do....	....do....	48,000	92,720	19.3	44.6	.....do..............	Do.
6936	....do....	....do....	48,000	98,720	19.7	41.9	.....do..............	Muzzle end.

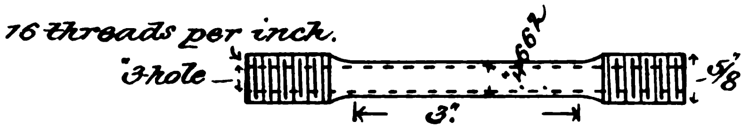
RIFLE-BARREL STEEL. .30 CALIBER.

.30 caliber rifle barrels.

Specimens from butt ends.
Sectional area .25 sq. inch.
Special specimen.



Specimens from middle of lengths, and muzzle ends.
Sectional area .70 sq. inch.



No. 6493.

Marks, S 6.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000333	.000233	....	....	
20,000	.000667	.000334	....	....	
30,000	.001000	.000333	....	....	
40,000	.001333	.000333	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002033	.000366	....	....	
70,000	.002367	.000334	....	....	
71,000	.002400	.000033	....	....	Elastic limit.
72,000	.007433	.005033	....	....	
73,000	.008167	.000734	....	....	
74,000	.008800	.000633	....	....	
75,000	.009233	.000433	....	....	
76,000	.009733	.000500	....	....	
78,000	.011000	.001267	....	....	
80,000	.012400	.001400	....	....	
84,000	.015067	.002667	....	....	
88,000	.018000	.002933	....	....	
92,000	.021333	.003333	....	....	
96,000	.024500	.003167	....	....	
100,000	.028333	.003833	....	....	
104,000	.032667	.004334	....	....	
108,000	.037000	.004333	....	....	
112,000	.044667	.007667	....	....	
116,000	.054333	.009666	....	....	
122,400	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	122,400
Elastic limit per square inch of original section ....do...	71,000
Elongation per inch after rupture ....inch..	.1667
Elongation per inch under strain at elastic limit ....do...	.002400
Reduction in diameter at point of rupture ....do...	.125
Reduction in area after rupture, per cent of original section	43.3
Position of rupture	1″.4 from neck
Character of broken surface	fine silky, cup shaped
Elongation of inch sections	″.11, ″.27*, ″.12

No. 6494.

Marks, S 6.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	....	....	
10,000	.000333	.000233	....	....	
20,000	.000667	.000334	....	....	
30,000	.001000	.000333	....	....	
40,000	.001367	.000367	....	....	
50,000	.001700	.000333	0.	....	
60,000	.002033	.000333	....	....	
68,000	.002333	.000300	....	....	
69,000	.002367	.000034	....	....	Elastic limit.
70,000	.010000	.007633	....	....	
71,000	.010333	.000333	....	....	
72,000	.010600	.000267	....	....	
73,000	.011033	.000433	....	....	
74,000	.011400	.000367	....	....	
76,000	.012700	.001300	....	....	
78,000	.014000	.001300	....	....	
80,000	.015667	.001667	....	....	
84,000	.018667	.003000	....	....	
88,000	.021933	.003266	....	....	
92,000	.025500	.003567	....	....	
96,000	.029333	.003833	....	....	
100,000	.034333	.005000	....	....	
104,000	.040000	.005667	....	....	
108,000	.047000	.007000	....	....	
112,000	.058667	.011667	....	....	
118,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	118,900
Elastic limit per square inch of original section	do	69,000
Elongation per inch after rupture	inch	.1900
Elongation per inch under strain at elastic limit	do	.002367
Reduction in diameter at point of rupture	do	.145
Reduction in area after rupture, per cent of original section		49.1
Position of rupture		at middle of stem
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		″.12, ″.33*, ″.12

No. 6498.

Marks, S 6 . .
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000133	.000133	0.	....	
10,000	.000333	.000200	....	....	
20,000	.000667	.000334	....	....	
30,000	.001000	.000333	....	....	
40,000	.001333	.000333	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002067	.000400	....	....	
68,000	.002400	.000333	....	....	
69,000	.002433	.000033	....	....	Elastic limit.
70,000	.010333	.007900	....	....	
71,000	.010600	.000267	....	....	
72,000	.011033	.000433	....	....	
73,000	.011500	.000467	....	....	
74,000	.012233	.000733	....	....	
76,000	.013333	.001100	....	....	
78,000	.014500	.001167	....	....	
80,000	.016600	.002100	....	....	
84,000	.019000	.002400	....	....	
88,000	.022500	.003500	....	....	
92,000	.026333	.003833	....	....	
96,000	.030000	.003667	....	....	
100,000	.035167	.005167	....	....	
104,000	.041000	.005833	....	....	
108,000	.049500	.008500	....	....	
112,000	.060000	.010500	....	....	
119,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	119,000
Elastic limit per square inch of original section ....do...	69,000
Elongation per inch after rupture ....inch..	.1967
Elongation per inch under strain at elastic limit............do...	.002433
Reduction in diameter at point of rupture............do...	.155
Reduction in area after rupture, per cent of original section............	51.9
Position of rupture	1″.6 from neck
Character of broken surface............	fine silky, cup shaped
Elongation of inch sections............	″.12, ″.35*, ″.12

No. 6499.

From rolled barrel, without reheating.
Marks, S 6 . . . .
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000683	.000333	....	....	
30,000	.001000	.000367	....	....	
40,000	.001333	.000333	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002000	.000333	....	....	
64,000	.002200	.000200	....	....	
65,000	.002233	.000033	....	....	Elastic limit.
66,000	.003833	.001600	....	....	
67,000	.008767	.004934	....	....	
68,000	.009500	.000733	....	....	
69,000	.009900	.000400	....	....	
70,000	.010333	.000433	....	....	
72,000	.011333	.001000	....	....	
74,000	.013000	.001667	....	....	
76,000	.014067	.001067	....	....	
78,000	.015667	.001600	....	....	
80,000	.017333	.001666	....	....	
84,000	.020833	.003500	....	....	
88,000	.023833	.003000	....	....	
92,000	.027833	.004000	....	....	
96,000	.033000	.005167	....	....	
100,000	.037833	.004833	....	....	
104,000	.043333	.005500	....	....	
108,000	.052333	.009000	....	....	
112,000	.065000	.012667	....	....	
116,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	116,100
Elastic limit per square inch of original section	do...	65,000
Elongation per inch after rupture	inch..	.1800
Elongation per inch under strain at elastic limit	do...	.002233
Reduction in diameter at point of rupture	do...	.155
Reduction in area after rupture, per cent of original section		51.9
Position of rupture		″.9 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		″.09, ″.13, ″.32*

No. 6500.

From balance of rolled barrel, reheated in gas furnace and packed in lime.

Marks, S 6 . . . . .
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000133	.000133	0.	....	
10,000	.000300	.000167	....	....	
20,000	.000633	.000333	....	....	
30,000	.001000	.000367	....	....	
40,000	.001333	.000333	....	....	
50,000	.001667	.000334	0.	....	
58,000	.001967	.000300	....	....	Elastic limit.
59,000	.011333	.009366	....	....	
60,000	.011833	.000500	....	....	
61,000	.012067	.000234	....	....	
62,000	.012267	.000200	....	....	
64,000	.013000	.000733	....	....	
66,000	.015000	.002000	....	....	
68,000	.016333	.001333	....	....	
72,000	.019833	.003500	....	....	
76,000	.023000	.003167	....	....	
80,000	.027500	.004500	....	....	
84,000	.031333	.003833	....	....	
88,000	.036667	.005334	....	....	
92,000	.044000	.007333	....	....	
96,000	.053333	.009333	....	....	
100,000	.065000	.011667	....	....	
105,400	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	105,400
Elastic limit per square inch of original section	do...	58,000
Elongation per inch after rupture	inch..	.1767
Elongation per inch under strain at elastic limit	do...	.001967
Reduction in diameter at point of rupture	do...	.155
Reduction in area after rupture, per cent of original section		51.9
Position of rupture		″.6 from neck
Character of broken surface		fine silky
Elongation of inch sections		″.08, ″.11, ″.34*

No. 6502.

Rolled barrel, after reheating and annealing in lime.
Marks, S 6 . . . . . .
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000167	.000167	0.	....	
10,000	.000333	.000166	....	....	
20,000	.000667	.000334	....	....	
30,000	.001033	.000366	....	....	
40,000	.001367	.000334	....	....	
50,000	.001733	.000366	0.	....	
60,000	.002067	.000334	....	....	
67,000	.002333	.000266	....	....	
68,000	.602367	.000034	....	....	Elastic limit.
69,000	.005667	.003300	....	....	
70,000	.007000	.001333	....	....	
71,000	.008167	.001167	....	....	
74,000	.010433	.002266	....	....	
76,000	.012333	.001900	....	....	
78,000	.013767	.001434	....	....	
80,000	.015400	.001633	....	....	
84,000	.019000	.003600	....	....	
88,000	.022333	.003333	....	....	
92,000	.026667	.004334	....	....	
96,000	.031000	.004333	....	....	
100,000	.036667	.005667	....	....	
104,000	.043333	.006666	....	....	
108,000	.055000	.011667	....	....	
112,000	.073333	.018333	....	....	
114,700	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	114,700
Elastic limit per square inch of original section	do...	68,000
Elongation per inch after rupture	inch..	.1900
Elongation per inch under strain at elastic limit	do...	.002367
Reduction in diameter at point of rupture	do...	.145
Reduction in area after rupture, per cent of original section		49.1
Position of rupture		1″.3 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		″.10, ″.27*, ″.20

No. 6508.

Marks, S 6.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	....	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001300	.000333	....	....	
50,000	.001633	.000333	0.	....	
60,000	.002000	.000367	....	....	
68,000	.002300	.000300	....	....	
69,000	.002333	.000033	....	....	Elastic limit.
70,000	.007167	.004834	....	....	
71,000	.007333	.000166	....	....	
72,000	.007867	.000534	....	....	
74,000	.009000	.001133	....	....	
76,000	.010067	.001067	....	....	
80,000	.013000	.002933	....	....	
84,000	.015267	.002267	....	....	
88,000	.018167	.002900	....	....	
92,000	.021167	.003000	....	....	
96,000	.024333	.003166	....	....	
100,000	.028000	.003667	....	....	
104,000	.032333	.004333	....	....	
108,000	.037000	.004667	....	....	
112,000	.439000	.006900	....	....	
123,950	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	123,950
Elastic limit per square inch of original section	do...	69,000
Elongation per inch after rupture	inch..	.1733
Elongation per inch under strain at elastic limit	do...	.002333
Reduction in diameter at point of rupture	do...	.135
Reduction in area after rupture, per cent of original section		46.2
Position of rupture		1″.24 from neck
Character of broken surface		fine, silky
Elongation of inch sections		″.24*, ″.18, ″.10

No. 6550.

Marks, S 6.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000667	.000367	....	....	
30,000	.001000	.000333	....	....	
40,000	.001333	.000333	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002000	.000333	....	....	
65,000	.002200	.000200	....	....	
66,000	.002267	.000067	....	....	
67,000	.002300	.000033	....	....	
68,000	.002367	.000067	....	....	Elastic limit.
69,000	.007667	.005300	....	....	
70,000	.008300	.000633	....	....	
72,000	.009333	.001033	....	....	
76,000	.012000	.002667	....	....	
80,000	.015000	.003000	....	....	
84,000	.017333	.002333	....	....	
88,000	.020333	.003000	....	....	
92,000	.023667	.003334	....	....	
96,000	.027333	.003666	....	....	
100,000	.031333	.004000	....	....	
104,000	.036000	.004667	....	....	
108,000	.042167	.006167	....	....	
112,000	.049667	.007500	....	....	
121,050	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	121,050
Elastic limit per square inch of original section	do...	68,000
Elongation per inch after rupture	inch..	.1767
Elongation per inch under strain at elastic limit	do...	.002367
Reduction in diameter at point of rupture	do...	.125
Reduction in area after rupture, per cent. of original section		43.3
Position of rupture		at middle of stem
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		".11, ".31*, ".11

No. 6551.

From rolled barrel.
Marks, S 6 R.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100			
10,000	.000300	.000200			
20,000	.000667	.000367			
30,000	.001000	.000333			
40,000	.001333	.000333			
50,000	.001700	.000367	0.		
58,000	.002000	.000300			
59,000	.002033	.000033			Elastic limit.
	.013333	.011300			
60,000	.016000	.002667			
61,000	.016500	.000500			
62,000	.017200	.000700			
64,000	.019167	.001967			
66,000	.021000	.001833			
68,000	.023000	.002000			
72,000	.028167	.005167			
76,000	.033667	.005500			
80,000	.040000	.006333			
84,000	.048000	.008000			
88,000	.060000	.012000			
97,100					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	97,100
Elastic limit per square inch of original section	do	59,000
Elongation per inch after rupture	inch	.2767
Elongation per inch under strain at elastic limit	do	.002033
Reduction in diameter at point of rupture	do	.185
Reduction in area after rupture, per cent of original section		59.8
Position of rupture		at middle of stem
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		″.18, ″.45*, ″.20

No. 6552.

Marks, S 7.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001333	.000366	....	....	
50,000	.001667	.000334	....	....	
60,000	.002000	.000333	....	....	
66,000	.002200	.000200	....	....	
67,000	.002267	.000067	....	....	Elastic limit.
68,000	.008667	.006400	....	....	
69,000	.008833	.000166	....	....	
70,000	.009167	.000334	....	....	
72,000	.010333	.001166	....	....	
76,000	.012833	.002500	....	....	
80,000	.015667	.002834	....	....	
84,000	.018667	.003000	....	....	
88,000	.021667	.003000	....	....	
92,000	.025167	.003500	....	....	
96,000	.028667	.003500	....	....	
100,000	.032667	.004000	....	....	
104,000	.034333	.001666	....	....	
108,000	.043667	.009334	....	....	
112,000	.053333	.009666	....	....	
120,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	120,500
Elastic limit per square inch of original section	do...	67,000
Elongation per inch after rupture	inch..	.1833
Elongation per inch under strain at elastic limit	do...	.002267
Reduction in diameter at point of rupture	do...	.135
Reduction in area after rupture, per cent of original section		46.2
Position of rupture		at middle of stem
Character of broken surface		fine silky
Elongation of inch sections		".12, ".31*, ".12

No. 6553.

From rolled barrel, reheated and annealed in lime.
Marks, S 7 R.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001300	.000333	....	....	
50,000	.001633	.000333	0.	....	
60,000	.002000	.000367	....	....	
61,000	.002033	.000033	....	....	
62,000	.002067	.000034	....	....	Elastic limit.
63,000	.012667	.010600	....	....	
64,000	.016067	.003400	....	....	
65,000	.016667	.000600	....	....	
66,000	.017367	.000700	....	....	
68,000	.019333	.001966	....	....	
70,000	.021333	.002000	....	....	
72,000	.023333	.002000	....	....	
76,000	.028000	.004667	....	....	
80,000	.032667	.004667	....	....	
84,000	.039000	.006333	....	....	
88,000	.046333	.007333	....	....	
92,000	.056667	.010334	....	....	
102,050	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	102,050
Elastic limit per square inch of original section	do...	62,000
Elongation per inch after rupture	inch..	.2333
Elongation per inch under strain at elastic limit	do...	.002067
Reduction in diameter at point of rupture	do...	.165
Reduction in area after rupture, per cent of original section		54.6
Position of rupture		1".46 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		".13, ".39*, ".18

No. 6575.

Marks, S 8.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001300	.000333	....	....	
50,000	.001667	.000367	0.	....	
60,000	.002000	.000333	....	....	
69,000	.002300	.000300	....	....	
70,000	.002333	.000033	....	....	Elastic limit.
	.011667	.009334	....	....	
71,000	.012033	.000366	....	....	
72,000	.012667	.000634	....	....	
74,000	.013667	.001000	....	....	
76,000	.016000	.002333	....	....	
80,000	.019000	.003000	....	....	
84,000	.022667	.003667	....	....	
88,000	.027000	.004333	....	....	
92,000	.031333	.004333	....	....	
96,000	.036667	.005334	....	....	
100,000	.043333	.006666	....	....	
104,000	.050667	.007334	....	....	
113,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	113,500
Elastic limit per square inch of original section	do...	70,000
Elongation per inch after rupture	inch..	.1900
Elongation per inch under strain at elastic limit	do...	.002333
Reduction in diameter at point of rupture	do...	.135
Reduction in area after rupture, per cent of original section		46.2
Position of rupture		1".4 from neck
Character of broken surface		fine silky
Elongation of inch sections		".15, ".31*, ".11

No. 6577.

From rolled barrel.
Marks, S 8 R.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000133	.000133	0.		
10,000	.000333	.000200			
20,000	.000667	.000334			
30,000	.001000	.000333			
40,000	.001333	.000333	0.		
50,000	.001700	.000367			
55,000	.001933	.000233			
60,000	.002100	.000167			
65,000	.002333	.000233			
66,000	.002367	.000034			
67,000	.002400	.000033			
68,000	.002433	.000033			Elastic limit.
	.011667	.009234			
69,000	.013333	.001666			
70,000	.014000	.000667			
71,000	.014833	.000833			
72,000	.015667	.000834			
76,000	.020333	.004666			
80,000	.024333	.004000			
84,000	.029000	.004667			
88,000	.034333	.005333			
92,000	.040667	.006334			
96,000	.049333	.008666			
100,000	.056667	.007334			
108,000					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	108,000
Elastic limit per square inch of original section	do...	68,000
Elongation per inch after rupture	inch..	.1933
Elongation per inch under strain at elastic limit	do...	.002433
Reduction in diameter at point of rupture	do...	.165
Reduction in area after rupture, per cent of original section		54.6
Position of rupture		″.90 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		″.10, ″.18, ″.35*

No. 6578.

From rolled barrel cooled in air, reheated in gas furnace, and annealed in lime.

Marks, S 8 R A.

Diameter, ″.505.

Sectional area, .20 square inch.

Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000333	.000233	....	....	
20,000	.000667	.000334	....	....	
30,000	.001000	.000333	....	....	
40,000	.001367	.000367	0.	....	
50,000	.001700	.000333	....	....	
60,000	.002033	.000333	....	....	
65,000	.002233	.000200	....	....	
70,000	.002400	.000167	....	....	
75,000	.002600	.000200	....	....	
80,000	.002767	.000167	....	....	Elastic limit.
81,000	{.002900	.000133	....	....	
	{.031333	.028433	....	....	
82,000	.034333	.003000	....	....	
83,000	.034667	.000334	....	....	
84,000	.035067	.000400	....	....	
86,000	.037333	.002266	....	....	
88,000	.041333	.004000	....	....	
92,000	.050000	.008667	....	....	
96,000	.061333	.011333	....	....	
105,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	105,500
Elastic limit per square inch of original section	do...	80,000
Elongation per inch after rupture	inch..	.2433
Elongation per inch under strain at elastic limit	do...	.002767
Reduction in diameter at point of rupture	do...	.195
Reduction in area after rupture, per cent of original section		62.2
Position of rupture		1″.5 from neck
Character of broken surface		fine silky, serrated edges
Elongation of inch sections		″.14, ″.42*, ″.17

No. 6589.

Marks, S 9.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.001000	.000367	....	....	
40,000	.001333	.000333	....	....	
50,000	.001700	.000367	0.	....	
60,000	.002033	.000333	....	....	
64,000	.002167	.000134	....	....	
65,000	.002200	.000033	....	....	Elastic limit.
66,000	.002667	.000467	....	....	
67,000	.003500	.000833	....	....	
68,000	.005667	.002167	....	....	
69,000	.008667	.003000	....	....	
70,000	.010000	.001333	....	....	
72,000	.011000	.001000	....	....	
76,000	.013667	.002667	....	....	
80,000	.016667	.003000	....	....	
84,000	.020000	.003333	....	....	
88,000	.023667	.003667	....	....	
92,000	.027500	.003833	....	....	
96,000	.031667	.004167	....	....	
100,000	.036333	.004666	....	....	
104,000	.043000	.006667	....	....	
108,000	.051000	.008000	....	....	
117,600	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	117,600
Elastic limit per square inch of original section	do.	65,000
Elongation per inch after rupture	inch	.1900
Elongation per inch under strain at elastic limit	do.	.002200
Reduction in diameter at point of rupture	do.	.155
Reduction in area after rupture, per cent of original section		51.9
Position of rupture		1".5 from neck
Character of broken surface		fine silky
Elongation of inch sections		".13,".33*,".11

No. 6608.

Marks, S 9.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.001000	.000367	....	....	
40,000	.001333	.000333	....	....	
50,000	.001700	.000367	0.	....	
60,000	.002067	.000367	....	....	
69,000	.002400	.000333	....	....	Elastic limit.
70,000	.011000	.008600	....	....	
71,000	.011500	.000500	....	....	
72,000	.012067	.000567	....	....	
74,000	.013333	.001266	....	....	
76,000	.014667	.001334	....	....	
80,000	.017667	.003000	....	....	
84,000	.020833	.003166	....	....	
88,000	.023333	.002500	....	....	
92,000	.029333	.006000	....	....	
96,000	.033667	.004334	....	....	
100,000	.039333	.005666	....	....	
104,000	.045667	.006334	....	....	
108,000	.053333	.007666	....	....	
116,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	116,000
Elastic limit per square inch of original section............do...	69,000
Elongation per inch after rupture............inch..	.1900
Elongation per inch under strain at elastic limit............do...	.002400
Reduction in diameter at point of rupture............do...	.155
Reduction in area after rupture, per cent of original section............	51.9
Position of rupture............	at middle of stem
Character of broken surface............	fine silky, cup shaped
Elongation of inch sections............	".12, ".33*, ".12

No. 6611.

Marks, S–10.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000333	.000233	....	....	
20,000	.000633	.000300	....	....	
30,000	.001000	.000367	....	....	
40,000	.001333	.000333	....	....	
50,000	.001700	.000367	0.	....	
60,000	.002000	.000300	....	....	
70,000	.002367	.000367	....	....	
73,000	.002433	.000066	....	....	Elastic limit.
74,000	.010333	.007900	....	....	
76,000	.011667	.001334	....	....	
80,000	.015000	.003333	....	....	
84,000	.018000	.003000	....	....	
88,000	.021167	.003167	....	....	
92,000	.024333	.003166	....	....	
96,000	.028667	.004334	....	....	
100,000	.033000	.004333	....	....	
104,000	.038333	.005333	....	....	
108,000	.045000	.006667	....	....	
112,000	.053333	.008333	....	....	
119,200	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section. ....pounds..	119,200
Elastic limit per square inch of original section ....do...	73,000
Elongation per inch after rupture ....inch..	.1833
Elongation per inch under strain at elastic limit ....do...	.002433
Reduction in diameter at point of rupture....do...	.155
Reduction in area after rupture, per cent of original section....	51.9
Position of rupture	1″.3 from neck
Character of broken surface....	fine silky, cup shaped
Elongation of inch sections....	″.18, ″.27*, ″.10

No. 6616.

Marks, S 9–R.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001300	.000333	....	....	
50,000	.001667	.000367	0.	....	
60,000	.002033	.000366	....	....	
67,000	.002267	.000234	....	....	
68,000	.002300	.000033	....	....	Elastic limit.
69,000	.019167	.016867	....	....	
70,000	.019667	.000500	....	....	
72,000	.021667	.002000	....	....	
74,000	.023667	.002000	....	....	
76,000	.026333	.002666	....	....	
80,000	.031667	.005334	....	....	
84,000	.038333	.006666	....	....	
88,000	.045667	.007334	....	....	
92,000	.056000	.010333	....	....	
102,050	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	102,050
Elastic limit per square inch of original section ....do...	68,000
Elongation per inch after rupture ....inch..	.2167
Elongation per inch under strain at elastic limit ....do...	.002300
Reduction in diameter at point of rupture..do...	.175
Reduction in area after rupture, per cent of original section..	57.2
Position of rupture..	1".5 from neck
Character of broken surface	fine silky, cup shaped
Elongation of inch sections..	".17, ".36*, ".12

No. 6617.

Marks, S 9–R A.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001300	.000333	....	....	
50,000	.001667	.000367	0.	....	
60,000	.002000	.000333	....	....	
69,000	.002300	.000300	....	....	Elastic limit.
70,000	.024667	.022367	....	....	
71,000	.025667	.001000	....	....	
72,000	.027000	.001333	....	....	
76,000	.032000	.005000	....	....	
80,000	.039333	.007333	....	....	
84,000	.048000	.008667	....	....	
88,000	.060667	.012667	....	....	
92,000	.080000	.019333	....	....	
97,550	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section........pounds..	97,550
Elastic limit per square inch of original section........do...	69,000
Elongation per inch after rupture........inch..	.2467
Elongation per inch under strain at elastic limit........do...	.002300
Reduction in diameter at point of rupture........do...	.195
Reduction in area after rupture, per cent of original section........	62.2
Position of rupture........	1″.7 from neck
Character of broken surface........	fine silky, cup shaped
Elongation of inch sections........	″.15, ″.44*, ″.15

No. 6618.

Marks, S 10–R.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000200	.000133	....	....	
20,000	.000500	.000300	....	....	
30,000	.000833	.000333	....	....	
40,000	.001200	.000367	....	....	
50,000	.001633	.000433	—.000033	—.000033	
60,000	.001967	.000334	....	....	
70,000	.002333	.000366	....	....	
71,000	.002367	.000034	....	....	Elastic limit.
72,000	.015000	.012633	....	....	
73,000	.015600	.000600	....	....	
74,000	.016067	.000467	....	....	
78,000	.019833	.003766	....	....	
82,000	.023333	.003500	....	....	
86,000	.027667	.004334	....	....	
90,000	.032167	.004500	....	....	
94,000	.034167	.002000	....	....	
98,000	.045000	.010833	....	....	
102,000	.052667	.007667	....	....	
111,950	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ......pounds..	111,950
Elastic limit per square inch of original section ......do...	71,000
Elongation per inch after rupture ......inch..	.2133
Elongation per inch under strain at elastic limit ......do...	.002367
Reduction in diameter at point of rupture ......do...	.175
Reduction in area after rupture, per cent of original section	57.2
Position of rupture	1″.62 from neck
Character of broken surface	fine silky, cup shaped
Elongation of inch sections	″.12, ″.37*, ″.15

No. 6619.

Marks, S 10–R A.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.		
10,000	.000300	.000200			
20,000	.000633	.000333			
30,000	.000967	.000334			
40,000	.001300	.000333			
50,000	.001667	.000367	0.		
60,000	.002000	.000333			
70,000	.002333	.000333			
71,000	.002367	.000034			
72,000	.002400	.000033			Elastic limit.
	.011667	.009267			
73,000	.012333	.000666			
74,000	.013000	.000667			
76,000	.014500	.001500			
80,000	.018667	.004167			
84,000	.022000	.003333			
88,000	.026333	.004333			
92,000	.031167	.004834			
96,000	.037000	.005833			
100,000	.044333	.007333			
112,550					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	112,550
Elastic limit per square inch of original section	do	72,000
Elongation per inch after rupture	inch	.2133
Elongation per inch under strain at elastic limit	do	.002400
Reduction in diameter at point of rupture	do	.175
Reduction in area after rupture, per cent of original section		57.2
Position of rupture		1″ from neck
Character of broken surface		fine silky
Elongation of inch sections		″.12, ″.18, ″.34*

No. 6620.

Marks, S 10–1.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001333	.000366	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002000	.000333	....	....	
70,000	.002367	.000367	....	....	Elastic limit.
71,000	.011333	.008966	....	....	
72,000	.012033	.000700	....	....	
76,000	.015667	.003634	....	....	
80,000	.018333	.002666	....	....	
84,000	.022000	.003667	....	....	
88,000	.025500	.003500	....	....	
92,000	.030000	.004500	....	....	
96,000	.035000	.005000	....	....	
100,000	.040667	.005667	....	....	
115,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	115,100
Elastic limit per square inch of original section	do...	70,000
Elongation per inch after rupture	inch..	.1933
Elongation per inch under strain at elastic limit	do...	.002367
Reduction in diameter at point of rupture	do...	.145
Reduction in area after rupture, per cent of original section		49.1
Position of rupture		at middle of stem
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		″.12, ″.34*, ″.12

No. 6621.

Marks, S 10-2.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.		
10,000	.000300	.000233			
20,000	.000633	.000333			
30,000	.000967	.000334			
40,000	.001333	.000366			
50,000	.001667	.000334	0.		
60,000	.002083	.000366			
70,000	.002367	.000334			Elastic limit.
	.007000	.004633			
71,000	.007667	.000667			
72,000	.008100	.000433			
76,000	.011000	.002900			
80,000	.013000	.002000			
84,000	.016000	.003000			
88,000	.019000	.003000			
92,000	.021667	.002667			
96,000	.025167	.003500			
100,000	.028667	.003500			
104,000	.033333	.004666			
123,050					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	123,050
Elastic limit, per square inch of original section	do...	70,000
Elongation per inch after rupture	inch..	.1733
Elongation per inch under strain at elastic limit	do...	.002367
Reduction in diameter at point of rupture	do...	.145
Reduction in area after rupture, per cent of original section		49.1
Position of rupture		at middle of stem
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		″.11, ″.30*, ″.11

No. 6622.

Marks, S–11.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.		
10,000	.000333	.000233			
20,000	.000667	.000334			
30,000	.001000	.000333			
40,000	.001333	.000333			
50,000	.001700	.000367	0.		
60,000	.002033	.000333			
70,000	.002400	.000367			Elastic limit.
71,000	.012167	.009767			
72,000	.013000	.000833			
74,000	.014000	.001000			
76,000	.015500	.001500			
80,000	.019000	.003500			
84,000	.022667	.003667			
88,000	.027167	.004500			
92,000	.031000	.003833			
96,000	.036333	.005333			
100,000	.042667	.006334			
104,000	.051333	.008666			
108,000	.063333	.012000			
114,100					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	114,100
Elastic limit per square inch of original section	do...	70,000
Elongation per inch after rupture	inch..	.1967
Elongation per inch under strain at elastic limit	do...	.002400
Reduction in diameter at point of rupture	do...	.155
Reduction in area after rupture, per cent of original section		51.9
Position of rupture		1″.3 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		″.20, ″.28*, ″.11

No. 6631.

Marks, S–12.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001300	.000333	....	....	
50,000	.001633	.000333	0.	....	
60,000	.002000	.000367	....	....	
68,000	.002267	.000267	....	....	
69,000	.002300	.000033	....	....	Elastic limit.
70,000	.014333	.012033	....	....	
71,000	.015000	.000667	....	....	
72,000	.015600	.000600	....	....	
74,000	.017333	.001733	....	....	
76,000	.019333	.002000	....	....	
80,000	.023000	.003667	....	....	
84,000	.027667	.004667	....	....	
88,000	.032667	.005000	....	....	
92,000	.037500	.004833	....	....	
96,000	.045333	.007833	....	....	
100,000	.054000	.008667	....	....	
109,600	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	109,600
Elastic limit per square inch of original section	do...	69,000
Elongation per inch after rupture	inch..	.2133
Elongation per inch under strain at elastic limit	do...	.002300
Reduction in diameter at point of rupture	do...	.165
Reduction in area after rupture, per cent of original section		54.6
Position of rupture		at middle of stem
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		″.13, ″.37*, ″.14

No. 6641.

Marks, S-13.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.001000	.000367	....	....	
40,000	.001333	.000333	....	....	
50,000	.001700	.000367	0.	....	
60,000	.002033	.000333	....	....	
68,000	.002333	.000300	....	....	
69,000	.002367	.000034	....	....	Elastic limit
70,000	.012000	.009633	....	....	
71,000	.012500	.000500	....	....	
72,000	.013000	.000500	....	....	
76,000	.016333	.003333	....	....	
80,000	.019500	.003167	....	....	
84,000	.023167	.003667	....	....	
88,000	.027000	.003833	....	....	
92,000	.031667	.004667	....	....	
96,000	.037000	.005333	....	....	
100,000	.044000	.007000	....	....	
113,050	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	113,050
Elastic limit per square inch of original section ....do...	69,000
Elongation per inch after rupture ....inch..	.2000
Elongation per inch under strain at elastic limit ....do...	.002367
Reduction in diameter at point of rupture ....do...	.145
Reduction in area after rupture, per cent of original section	49.1
Position of rupture	at middle of stem
Character of broken surface	fine, silky
Elongation of inch sections	″.13, ″.34*, ″13

No. 6719.

Marks, S 14.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001333	.000366	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002033	.000366	....	....	
70,000	.002367	.000334	....	....	
71,000	.002400	.000033	....	....	Elastic limit.
72,000	.015667	.013267	....	....	
74,000	.017000	.001333	....	....	
76,000	.019000	.002000	....	....	
80,000	.023333	.004333	....	....	
84,000	.027667	.004334	....	....	
88,000	.033333	.005666	....	....	
92,000	.040333	.007000	....	....	
96,000	.048667	.008334	....	....	
100,000	.060667	.012000	....	....	
108,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	108,000
Elastic limit per square inch of original section	do...	71,000
Elongation per inch after rupture	inch..	.2167
Elongation per inch under strain at elastic limit	do...	.002400
Reduction in diameter at point of rupture	do...	.165
Reduction in area after rupture, per cent of original section		54.6
Position of rupture		1″.4 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		″.12, ″.35*, ″.18

No. 6736.

Marks, S-14.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.001000	.000367	....	....	
40,000	.001333	.000333	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002000	.000333	....	....	
70,000	.002367	.000367	....	....	
71,000	.002400	.000033	....	....	
72,000	.002433	.000033	....	....	Elastic limit.
73,000	.016667	.014234	....	....	
74,000	.018100	.001433	....	....	
76,000	.020833	.002733	....	....	
80,000	.023333	.002500	....	....	
84,000	.028000	.004667	....	....	
88,000	.034333	.006333	....	....	
92,000	.039500	.005167	....	....	
96,000	.048333	.008833	....	....	
100,000	.060000	.011667	....	....	
108,500	....	....	....	....	Tensile strength.

General summary.

Textile strength per square inch of original section	pounds..	108,500
Elastic limit per square inch of original section	do...	72,000
Elongation per inch after rupture	inch..	.2333
Elongation per inch under strain at elastic limit	do...	.002433
Reduction in diameter at point of rupture	do...	.175
Reduction in area after rupture, per cent of original section		57.2
Position of rupture		1".4 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		".19, ".38*, ".13

No. 6757.

Marks, S 15.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.001000	.000367	....	....	
40,000	.001333	.000333	....	....	
50,000	.001667	.000334	....	....	
60,000	.002000	.000333	....	....	
70,000	.002333	.000333	....	....	
71,000	.002367	.000034	....	....	Elastic limit.
72,000	.012333	.009966	....	....	
74,000	.013500	.001167	....	....	
76,000	.015167	.001667	....	....	
80,000	.018333	.003166	....	....	
84,000	.022067	.003734	....	....	
88,000	.026000	.003933	....	....	
92,000	.030667	.004667	....	....	
96,000	.035000	.004333	....	....	
100,000	.042500	.007500	....	....	
113,850	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	113,850
Elastic limit per square inch of original section	do...	71,000
Elongation per inch after rupture	inch..	.2200
Elongation per inch under strain at elastic limit	do...	.002367
Reduction in diameter at point of rupture	do...	.165
Reduction in area after rupture, per cent of original section		54.6
Position of rupture		1".3 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		".20, ".34*, ".12

No. 6786.

Rolled barrel, butt.
Marks, S 15 R B.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000333	.000233	....	....	
20,000	.000667	.000334	....	....	
30,000	.001000	.000333	....	....	
40,000	.001333	.000333	....	....	
50,000	.001700	.000367	....	....	
60,000	.002033	.000333	0.	....	
70,000	.002367	.000334	....	....	Elastic limit.
71,000	.012333	.009966	....	....	
72,000	.013000	.000667	....	....	
76,000	.015833	.002833	....	....	
80,000	.018667	.002834	....	....	
84,000	.022500	.003833	....	....	
88,000	.026000	.003500	....	....	
92,000	.030667	.004667	....	....	
96,000	.035333	.004666	....	....	
100,000	.041000	.005667	....	....	
104,000	.048333	.007333	....	....	
115,300	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	115,300
Elastic limit per square inch of original section	do	70,000
Elongation per inch after rupture	inch	.1867
Elongation per inch under strain at elastic limit	do	.002367
Reduction in diameter at point of rupture	do	.165
Reduction in area after rupture, per cent of original section		54.6
Position of rupture		1″.1 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		″.08, ″.15, ″.33

No. 6787.

Rolled barrel, muzzle.
Marks, S 15 R M.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000333	.000266	....	....	
20,000	.000667	.000334	....	....	
30,000	.001000	.000333	....	....	
40,000	.001333	.000333	....	....	
50,000	.001667	.000334	....	....	
60,000	.002000	.000333	0.	....	
70,000	.002333	.000333	....	....	
74,000	.002533	.000200	....	....	Elastic limit.
75,000	.012667	.000134	....	....	
76,000	.013333	.000666	....	....	
80,000	.016333	.003000	....	....	
84,000	.019667	.003334	....	....	
88,000	.023000	.003333	....	....	
92,000	.026667	.003667	....	....	
96,000	.031000	.004333	....	....	
100,000	.036333	.005333	....	....	
104,000	.042667	.006334	....	....	
118,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	118,000
Elastic limit per square inch of original section	do...	74,000
Elongation per inch after rupture	inch..	.1967
Elongation per inch under strain at elastic limit	do...	.002533
Reduction in diameter at point of rupture	do...	.175
Reduction in area after rupture, per cent of original section		57.2
Position of rupture		1″.4 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		″.10, ″.34*, ″.15

No. 6788.

Rolled barrel, annealed.
Marks, S 15 R A B.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000333	.000266	....	....	
20,000	.000667	.000334	....	....	
30,000	.001000	.000333	....	....	
40,000	.001333	.000333	....	....	
50,000	.001667	.000334	....	....	
60,000	.002000	.000333	0.	....	
64,000	.002133	.000133	....	....	
65,000	.002167	.000034	....	....	Elastic limit.
66,000	.024333	.022166	....	....	
67,000	.025167	.000834	....	....	
68,000	.026333	.001166	....	....	
72,000	.032000	.005667	....	....	
76,000	.037000	.005000	....	....	
80,000	.045000	.008000	....	....	
84,000	.053333	.008333	....	....	
95,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	95,500
Elastic limit per square inch of original section	do...	65,000
Elongation per inch after rupture	inch..	.2133
Elongation per inch under strain at elastic limit	do...	.002167
Reduction in diameter at point of rupture	do...	.165
Reduction in area after rupture, per cent of original section		54.6
Position of rupture		1″.1 from neck
Character of broken surface		fine silky, serrated
Elongation of inch sections		″.34*, ″.19, ″.11

No. 6789.

Marks, S 15 R A M.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001300	.000333	....	....	
50,000	.001667	.000367	....	....	
60,000	.002000	.000333	0.	....	
65,000	.002167	.000167	....	....	
66,000	.002200	.000033	....	....	Elastic limit.
67,000	.027333	.025133	....	....	
68,000	.028767	.001434	....	....	
72,000	.034667	.005900	....	....	
76,000	.042000	.007333	....	....	
80,000	.051333	.009333	....	....	
84,000	.062667	.011334	....	....	
93,600	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	93,6
Elastic limit per square inch of original section	do...	66,0
Elongation per inch after rupture	inch..	.24
Elongation per inch under strain at elastic limit	do...	.0022
Reduction in diameter at point of rupture	do...	.1
Reduction in area after rupture, per cent of original section		57
Position of rupture		1″.4 from ne
Character of broken surface		silky, serrat
Elongation of inch sections		″.14, ″.38*, ″.

No. 6791.

Finished barrel, oil tempered.
Marks, S 15 O T.
Sectional area, .25 square inch.
Gauged length, 1″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.0001	.0001	....	....	
10,000	.0002	.0001	....	....	
20,000	.0004	.0002	....	....	
30,000	.0008	.0004	....	....	
40,000	.0011	.0003	....	....	
50,000	.0013	.0002	....	....	
54,000	.0017	.0004	....	....	Elastic limit.
56,000	{ .0019	.0002	....	....	
	.0050	.0031	....	....	
57,000	.0065	.0015	....	....	
58,000	.0100	.0035	....	....	
59,000	.0135	.0035	....	....	
60,000	.0168	.0033	....	....	
64,000	.0210	.0042	....	....	
68,000	.0255	.0045	....	....	
72,000	.0302	.0047	....	....	
76,000	.0369	.0067	....	....	
80,000	.0440	.0071	....	....	
96,320	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	96,320
Elastic limit per square inch of original section	do...	54,000
Elongation per inch after rupture	inch..	.27
Elongation per inch under strain at elastic limit	do...	.0017
Reduction in diameter at point of rupture (exterior)	do...	.1008
Character of broken surface		silky, cup shaped

No. 6808.

Marks, S 16.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.001000	.000367	....	....	
40,000	.001333	.000333	....	....	
50,000	.001667	.000334	....	....	
60,000	.002033	.000366	....	....	
70,000	.002367	.000334	....	....	
75,000	.002567	.000200	....	....	
78,000	.002667	.000100	....	....	Elastic limit.
79,000	.011667	.009000	....	....	
80,000	.012333	.000666	....	....	
84,000	.015333	.003000	....	....	
88,000	.018000	.002667	....	....	
92,000	.021667	.003667	....	....	
96,000	.025000	.003333	....	....	
100,000	.028333	.003333	....	....	
104,000	.033000	.004167	....	....	
108,000	.038333	.005333	....	....	
112,000	.045167	.006834	....	....	
123,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section .... pounds..	123,900
Elastic limit per square inch of original section .... do...	78,000
Elongation per inch after rupture .... inch..	.1683
Elongation per inch under strain at elastic limit .... do...	.002667
Reduction in diameter at point of rupture .... do...	.115
Reduction in area after rupture, per cent of original section	40.3
Position of rupture	1".22 from neck
Character of broken surface	silky, cup shaped
Elongation of inch sections	".10, ".20, ".19

No. 6809.

Rolled barrel, butt.
Marks, S 16 R B.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001333	.000366	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002000	.000333	....	....	
70,000	.002367	.000367	....	....	
80,000	.002700	.000333	....	....	Elastic limit.
81,000	.017000	.014300	....	....	
82,000	.017600	.000600	....	....	
84,000	.018667	.001067	....	....	
88,000	.022333	.003666	....	....	
92,000	.026167	.003834	....	....	
96,000	.030500	.004333	....	....	
100,000	.035333	.004833	....	....	
120,400	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	120,400
Elastic limit per square inch of original section ....do...	80,000
Elongation per inch after rupture ....inch..	.1933
Elongation per inch under strain at elastic limit ....do...	.002700
Reduction in diameter at point of rupture....................do...	.155
Reduction in area after rupture, per cent of original section....................	51.9
Position of rupture	1″.6 from neck
Character of broken surface	Fine silky, cup shaped
Elongation of inch sections....................	″.11, ″.34*, ″.13

No. 6810.

Rolled barrel, muzzle.
Marks, S 16 R M.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.001000	.000367	....	....	
40,000	.001333	.000333	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002000	.000333	....	....	
70,000	.002367	.000367	....	....	
80,000	.002733	.000366	....	....	
81,000	.002767 .013667	.000034 .010900	....	....	Elastic limit.
82,000	.014667	.001000	....	....	
84,000	.015667	.001000	....	....	
88,000	.018333	.003166	....	....	
92,000	.022000	.003167	....	....	
96,000	.025667	.003667	....	....	
100,000	.029667	.004000	....	....	
104,000	.034000	.004333	....	....	
108,000	.040000	.006000	....	....	
123,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	123,100
Elastic limit per square inch of original section ....do...	81,000
Elongation per inch after rupture ....inch..	.1800
Elongation per inch under strain at elastic limit ....do...	.002767
Reduction in diameter at point of rupture ....do...	.156
Reduction in area after rupture, per cent of original section	51.9
Position of rupture	1".4 from neck
Character of broken surface........	fine silky, cup shaped
Elongation of inch sections........	".14, ".32*, ".08

No. 6811.

Rolled barrel annealed at butt.
Marks, S 16 R A B.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000333	.000233	....	....	
20,000	.000667	.000334	....	....	
30,000	.001000	.000333	....	....	
40,000	.001367	.000367	....	....	
50,000	.001700	.000333	0.	....	
60,000	.002033	.000333	....	....	Elastic limit.
61,000	.022500	.020467	....	....	
62,000	.024000	.001500	....	....	
64,000	.024833	.000833	....	....	
68,000	.030333	.005500	....	....	
72,000	.036667	.006334	....	....	
76,000	.044000	.007333	....	....	
80,000	.053000	.009000	....	....	
92,550	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	92,550
Elastic limit per square inch of original section	do...	60,000
Elongation per inch after rupture	inch..	.2233
Elongation per inch under strain at elastic limit	do...	.002033
Reduction in diameter at point of rupture	do...	.125
Reduction in area after rupture, per cent of original section		43.3
Position of rupture		1″.29 from neck
Character of broken surface		fine silky, trace of granulation
Elongation of inch sections		″.29*, ″.23*, ″.15

No. 6812.

Rolled barrel, annealed at muzzle.
Marks, S 16 R A M.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000333	.000233	....	....	
20,000	.000667	.000334	....	....	
30,000	.001000	.000333	....	....	
40,000	.001333	.000333	....	....	
50,000	.001700	.000367	0.	....	
60,000	.002083	.000383	....	....	Elas limit.
61,000	.022333	.020300	....	....	
62,000	.023167	.000834	....	....	
64,000	.024833	.001666	....	....	
68,000	.030333	.005500	....	....	
72,000	.036667	.006334	....	....	
76,000	.044833	.008166	....	....	
80,000	.054667	.009834	....	....	
91,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	91,500
Elastic limit per square inch of original section	do...	60,000
Elongation per inch after rupture	inch..	.2433
Elongation per inch under strain at elastic limit	do...	.002083
Reduction in diameter at point of rupture	do...	.185
Reduction in area after rupture, per cent of original section		59.8
Position of rupture		1".4 from neck
Character of broken surface		fine silky, serrated edges
Elongation of inch sections		".22, ".33*, ".18

No. 6814.

Marks. S 16 O T.
Sectional area, .25 square inch.
Gauged length, 1″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	
5,000	.0001	.0001	0.	....	Initial load.
10,000	.0003	.0002	....	....	
20,000	.0006	.0003	....	....	
30,000	.0010	.0004	....	....	
40,000	.0014	.0004	....	....	
50,000	.0018	.0004	....	....	
58,000	.0021	.0003	....	....	Elastic limit.
59,000	.0078	.0057	....	....	
60,000	.0107	.0029	....	....	
62,000	.0123	.0016	....	....	
64,000	.0136	.0013	....	....	
68,000	.0172	.0036	....	....	
72,000	.0203	.0031	....	....	
76,000	.0240	.0037	....	....	
80,000	.0282	.0042	....	....	
105,840	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	105,840
Elastic limit per square inch of original section	do...	58,000
Elongation per inch after rupture	inch..	.15
Elongation per inch under strain at elastic limit	do...	.0021
Reduction in diameter at point of rupture (exterior)	do...	.0308
Character of broken surface		fine granular

No. 6835.

Marks, S 17.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.		
10,000	.000300	.000233			
20,000	.000633	.000333			
30,000	.001000	.000367			
40,000	.001333	.000333			
50,000	.001700	.000367	0.		
60,000	.002033	.000333			
70,000	.002400	.000367			Elastic limit.
71,000	.002500	.000100			
72,000	.011383	.008883			
74,000	.013000	.001667			
76,000	.014500	.001500			
80,000	.018000	.003500			
84,000	.021000	.003000			
88,000	.025333	.004333			
92,000	.029333	.004000			
96,000	.034500	.005167			
100,000	.041333	.006833			
115,300					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	115,300
Elastic limit per square inch of original section	do...	70,000
Elongation per inch after rupture	inch..	.2000
Elongation per inch under strain at elastic limit	do...	.002400
Reduction in diameter at point of rupture	do...	.135
Reduction in area after rupture, per cent of original section		46.2
Position of rupture		1".6 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		".13, ".33*, ".14

No. 6895.

Rolled barrel.
Marks, $\overset{S}{R}{}^{17}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000333	.000266	....	....	
20,000	.000667	.000334	....	....	
30,000	.001000	.000333	....	....	
40,000	.001333	.000333	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002033	.000366	....	....	
70,000	.002367	.000334	....	....	
75,000	.002600	.000233	....	....	
78,000	.002700	.000100	....	....	
79,000	.002733	.000033	....	....	Elastic limit.
80,000	.023333	.020600	....	....	
82,000	.024667	.001334	....	....	
84,000	.027000	.002333	....	....	
88,000	.032000	.005000	....	....	
92,000	.036333	.004333	....	....	
96,000	.043333	.007000	....	....	
100,000	.051667	.008334	....	....	
112,050	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	112,050
Elastic limit per square inch of original section	do...	79,000
Elongation per inch after rupture	inch..	.2233
Elongation per inch under strain at elastic limit	do...	.002733
Reduction in diameter at point of rupture	do...	.175
Reduction in area after rupture, per cent of original section		57.2
Position of rupture		at middle of the stem
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		″.14, ″.39*, ″.14

No. 6896.

Rolled barrel, annealed.
Marks, $\frac{\text{S 17}}{\text{R A}}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000667	.000367	....	....	
30,000	.001000	.000333	....	....	
40,000	.001333	.000333	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002033	.000366	....	....	
70,000	.002400	.000367	....	....	
75,000	.002633	.000233	....	....	
76,000	.002667	.000034	....	....	Elastic limit.
	.022667	.020000	....	....	
77,000	.022800	.000133	....	....	
78,000	.022967	.000167	....	....	
80,000	.025067	.002100	....	....	
84,000	.029333	.004266	....	....	
88,000	.034333	.005000	....	....	
92,000	.041000	.006667	....	....	
96,000	.048333	.007333	....	....	
100,000	.059667	.011334	....	....	
109,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	109,500
Elastic limit per square inch of original section	do	76,000
Elongation per inch after rupture	inch	.2100
Elongation per inch under strain at elastic limit	do	.002667
Reduction in diameter at point of rupture	do	.175
Reduction in area after rupture, per cent of original section		57.2
Position of rupture		1" from neck
Character and broken surface		fine silky, serrated
Elongation of inch sections		".10, ".17, ".36*

No. 6917.

Finished barrel, oil tempered.
Marks, $\overset{S\ 17}{O\ T}$
Sectional area, .25 square inch.
Gauged length, 1″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.0001	.0001	0.	....	
10,000	.0003	.0002	....	....	
20,000	.0006	.0003	....	....	
30,000	.0009	.0003	....	....	
40,000	.0012	.0003	....	....	
50,000	.0016	.0004	0.	....	
60,000	.0020	.0004	....	....	
64,000	.0022	.0002	....	....	Elastic limit.
65,000	.0095	.0073	....	....	
66,000	.0130	.0035	....	....	
67,000	.0137	.0007	....	....	
68,000	.0145	.0008	....	....	
70,000	.0155	.0010	....	....	
72,000	.0177	.0022	....	....	
76,000	.0210	.0033	....	....	
80,000	.0253	.0043	....	....	
107,800	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	107,800
Elastic limit per square inch of original section	do	64,000
Elongation per inch after rupture	inch	.27
Elongation per inch under strain at elastic limit	do	.0022
Reduction in diameter at point of rupture (exterior)	do	.1108
Character of broken surface		silky, cup shaped

No. 6851.

Marks, S 18.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000333	.000233	....	....	
20,000	.000667	.000334	....	....	
30,000	.001000	.000333	....	....	
40,000	.001333	.000333	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002000	.000333	....	....	
70,000	.002367	.000367	....	....	
74,000	.002533	.000166	....	....	
75,000	.002600	.000067	....	....	
76,000	.002633	.000033	....	....	
77,000	.002667	.000034	....	....	Elastic limit.
79,000	.012833	.010166	....	....	
80,000	.013433	.000600	....	....	
84,000	.017000	.003567	....	....	
88,000	.020500	.003500	....	....	
92,000	.024167	.003667	....	....	
96,000	.028333	.004166	....	....	
100,000	.033333	.005000	....	....	
104,000	.039833	.006500	....	....	
118,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section........pounds..	118,100
Elastic limit per square inch of original section........do...	77,000
Elongation per inch after rupture........inch..	.1900
Elongation per inch under strain at elastic limit........do...	.002667
Reduction in diameter at point of rupture........do...	.155
Reduction in area after rupture, per cent of original section........	51.9
Position of rupture........	1″.2 from neck
Character of broken surface........	fine silky, cup shaped
Elongation of inch sections........	″.10, ″.27*, ″.20*

No. 6852.

Marks, S 19.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000333	.000233	....	....	
20,000	.000667	.000334	....	....	
30,000	.001000	.000333	....	....	
40,000	.001367	.000367	....	....	
50,000	.001700	.000333	....	....	
60,000	.002033	.000333	....	....	
70,000	.002367	.000334	....	....	
73,000	.002533	.000166	....	....	Elastic limit.
74,000	.012500	.009967	....	....	
75,000	.013000	.000500	....	....	
76,000	.013500	.000500	....	....	
78,000	.015167	.001667	....	....	
80,000	.016667	.001500	....	....	
84,000	.020333	.003666	....	....	
88,000	.023667	.003334	....	....	
92,000	.027833	.004166	....	....	
96,000	.033000	.005167	....	....	
100,000	.038333	.005333	....	....	
104,000	.045667	.007334	....	....	
116,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength, per square inch of original section	pounds..	116,000
Elastic limit per square inch of original section	..do...	73,000
Elongation per inch after rupture	inch..	.1967
Elongation per inch under strain at elastic limit	do...	.002533
Reduction in diameter at point of rupture	do...	.165
Reduction in area after rupture, per cent of original section		54.6
Position of rupture		1".2 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		".11, ".29*, ".19

No. 6871.

Marks, S 20.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000133	.000133	0.	....	
10,000	.000333	.000200	....	....	
20,000	.000667	.000334	....	....	
30,000	.001000	.000333	....	....	
40,000	.001333	.000333	....	....	
50,000	.001700	.000367	0.	....	
60,000	.002033	.000333	....	....	
70,000	.002400	.000367	....	....	
75,000	.002600	.000200	....	....	
76,000	.002633	.000033	....	....	Elastic limit.
77,000	.015333	.012700	....	....	
78,000	.016067	.000734	....	....	
80,000	.017500	.001433	....	....	
84,000	.020667	.003167	....	....	
88,000	.025667	.005000	....	....	
92,000	.030000	.004333	....	....	
96,000	.035000	.005000	....	....	
100,000	.041667	.006667	....	....	
115,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	115,500
Elastic limit per square inch of original section	do...	76,000
Elongation per inch after rupture	inch..	.2033
Elongation per inch under strain at elastic limit	do...	.002633
Reduction in diameter at point of rupture	do...	.155
Reduction in area after rupture, per cent of original section		51.9
Position of rupture		at middle of stem
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		″.12, ″.37*, ″.12

No. 7205.

Marks, S 26.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000267	.000200	....	....	
20,000	.000600	.000333	....	....	
30,000	.000933	.000333	....	....	
40,000	.001267	.000334	....	....	
50,000	.001600	.000333	0.	....	
60,000	.001967	.000367	....	....	
68,000	.002267	.000300	....	....	Elastic limit.
69,000	.007900	.005633	....	....	
70,000	.008333	.000433	....	....	
71,000	.008833	.000500	....	....	
72,000	.009667	.000834	....	....	
76,000	.012333	.002666	....	....	
80,000	.015267	.002934	....	....	
84,000	.018067	.002800	....	....	
88,000	.021333	.003266	....	....	
92,000	.025000	.003667	....	....	
96,000	.029333	.004333	....	....	
100,000	.034000	.004667	....	....	
104,000	.0433	.0093	....	....	
108,000	.0500	.0067	....	....	
112,000	.0600	.0100	....	....	
118,400	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	118,400
Elastic limit per square inch of original section	do...	68,000
Elongation per inch after rupture	inch..	.1833
Elongation per inch under strain at elastic limit	do...	.002267
Reduction in diameter at point of rupture	do...	.145
Reduction in area after rupture, per cent of original section		49.1
Position of rupture		1″.53 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		″.10, ″.33*, ″.12

No. 7206.

Marks, S 26.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000667	.000367	....	....	
30,000	.001000	.000333	....	....	
40,000	.001333	.000333	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002000	.000333	....	....	
69,000	.002333	.000333	....	....	Elastic limit.
70,000	.006733	.004400	....	....	
71,000	.007267	.000534	....	....	
72,000	.007733	.000466	....	....	
76,000	.010200	.002467	....	....	
80,000	.012833	.002633	....	....	
84,000	.015500	.002667	....	....	
88,000	.018667	.003167	....	....	
92,000	.021333	.002666	....	....	
96,000	.024733	.003400	....	....	
100,000	.028333	.003600	....	....	
104,000	.0333	.004967	....	....	
108,000	.0400	.0067	....	....	
112,000	.0467	.0067	....	....	
116,000	.0567	.0100	....	....	
120,000	.0700	.0133	....	....	
122,700	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	122,700
Elastic limit per square inch of original section	do...	69,000
Elongation per inch after rupture	inch..	.1767
Elongation per inch under strain at elastic limit	do...	.002333
Reduction in diameter at point of rupture	do...	.135
Reduction in area after rupture, per cent of original section		46.2
Position of rupture		at middle of stem
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		".11, ".31*, ".12

No. 7207.

Marks, S 26.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001300	.000333	....	....	
50,000	.001667	.000367	0.	....	
60,000	.002000	.000333	....	....	
67,000	.002233	.000233	....	....	Elastic limit.
68,000	.006667	.004434	....	....	
69,000	.007333	.000666	....	....	
70,000	.007667	.000334	....	....	
72,000	.008833	.001166	....	....	
76,000	.011533	.002700	....	....	
80,000	.014000	.002467	....	....	
84,000	.016933	.002933	....	....	
88,000	.019667	.002734	....	....	
92,000	.023200	.003533	....	....	
96,000	.026667	.003467	....	....	
100,000	.030400	.003733	....	....	
104,000	.0367	.0063	....	....	
108,000	.0433	.0066	....	....	
112,000	.0533	.0100	....	....	
116,000	.0633	.0100	....	....	
120,000	.1000	.0367	....	....	
120,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ......pounds..	120,500
Elastic limit per square inch of original section ......do...	67,000
Elongation per inch after rupture......inch..	.1767
Elongation per inch under strain at elastic limit ......do...	.002233
Reduction in diameter at point of rupture......do...	.145
Reduction in area after rupture, per cent of original section......	49.1
Position of rupture	1″.6 from neck
Character of broken surface......	fine silky, cup shaped
Elongation of inch sections......	″.10, ″.32*, ″.11

No. 6466.

From breech of barrel, annealed at low heat in charcoal.
Marks, S G C.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".
Green end bar.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.		
10,000	.000300	.000200			
20,000	.000633	.000333			
30,000	.001000	.000367			
35,000	.001133	.000133			
40,000	.001333	.000200			
50,000	.001667	.000334			
60,000	.002033	.000366			
61,000	.002067	.000034			
62,000	.002100	.000033			
63,000	.002133	.000033			
64,000	.002233	.000100			Elastic limit.
	.013100	.010867			
65,000	.013600	.000500			
66,000	.014333	.000733			
68,000	.015600	.001267			
70,000	.017333	.001733			
72,000	.018867	.001534			
76,000	.023467	.004600			
80,000	.028167	.004700			
84,000	.032433	.004266			
88,000	.038500	.006067			
92,000	.045767	.007267			
96,000	.056333	.010566			
104,900					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	104,900
Elastic limit per square inch of original section	do...	64,000
Elongation per inch after rupture	inch..	.1333
Elongation per inch under strain at elastic limit	do...	.002233
Reduction in diameter at point of rupture	do...	.145
Reduction in area after rupture, per cent of original section		49.1
Position of rupture		".65 from neck
Character of broken surface		silky
Elongation of inch sections		".34*, ".13, ".03

No. 6467.

From breech of barrel, annealed at low heat in line. Duplicate of No. 6466.

Marks, S G L.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.
Green end bar.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.001000	.000367	....	....	
35,000	.001183	.000133	....	....	
40,000	.001333	.000200	....	....	
50,000	.001667	.000334	....	....	
60,000	.002033	.000366	....	....	
65,000	.002200	.000167	....	....	
66,000	.002233	.000033	....	....	
67,000	.002300	.000067	....	....	
68,000	.002300	0.	....	....	
69,000	.002333	.000033	....	....	Elastic limit.
	.019667	.017334	....	....	
70,000	.019783	.000066	....	....	
72,000	.020333	.000600	....	....	
74,000	.022500	.002167	....	....	
76,000	.024667	.002167	....	....	
80,000	.029167	.004500	....	....	
84,000	.034667	.005500	....	....	
88,000	.040000	.005333	....	....	
92,000	.051333	.011333	....	....	
96,000	.058333	.007000	....	....	
105,400	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	105,400
Elastic limit per square inch of original section ....do...	69,000
Elongation per inch after rupture ....inch..	.2067
Elongation per inch under strain at elastic limit ....do...	.002333
Reduction in diameter at point of rupture........do...	.145
Reduction in area after rupture, per cent of original section	49.1
Position of rupture	1″.05 from neck
Character of broken surface	silky
Elongation of inch sections........	″.34*, ″.17, ″.11

No. 6468.

From breech of barrel, annealed at low heat in charcoal.
Marks, S R C.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.
Red end bar.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000233	.000166	....	....	
20,000	.000567	.000334	....	....	
30,000	.000900	.000333	....	....	
35,000	.001067	.000167	....	....	
40,000	.001300	.000233	....	....	
50,000	.001600	.000300	....	....	
60,000	.001967	.000367	....	....	
61,000	.002000	.000033	....	....	
62,000	.002000	0.	....	....	
63,000	.002067	.000067	....	....	Elastic limit.
64,000	.012833	.010766	....	....	
65,000	.013300	.000467	....	....	
66,000	.013833	.000533	....	....	
67,000	.014333	.000500	....	....	
68,000	.015467	.001134	....	....	
69,000	.016133	.000666	....	....	
70,000	.016767	.000634	....	....	
72,000	.017667	.000900	....	....	
74,000	.019533	.001866	....	....	
76,000	.020833	.001300	....	....	
80,000	.024500	.003667	....	....	
84,000	.027500	.003000	....	....	
88,000	.031333	.003833	....	....	
92,000	.036667	.005334	....	....	
96,000	.041767	.005100	....	....	
100,000	.050100	.008333	....	....	
104,000	.061667	.011567	....	....	
111,350	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	111,350
Elastic limit per square inch of original section	do...	63,000
Elongation per inch after rupture	inch...	.2000
Elongation per inch under strain at elastic limit	do...	.002067
Reduction in diameter at point of rupture	do...	.155
Reduction in area after rupture, per cent of original section		51.9
Position of rupture		1″.70 from neck
Character of broken surface		silky
Elongation of inch sections		″.13, ″.35*, ″.12

No. 6469.

From breech of barrel, annealed at low heat in lime. Duplicate of No. 6468.

Marks, S R L.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".
Red end bar.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000667	.000367	....	....	
30,000	.001000	.000333	....	....	
35,000	.001167	.000167	....	....	
40,000	.001367	.000200	....	....	
50,000	.001733	.000366	....	....	
51,000	.001767	.000034	....	....	
52,000	.001833	.000066	....	....	
53,000	.001900	.000067	....	....	
54,000	.001967	.000067	....	....	
55,000	.002000	.000033	....	....	
56,000	.002133	.000133	....	....	Elastic limit.
	.002667	.000534	....	....	
57,000	.003100	.000433	....	....	
58,000	.005667	.002567	....	....	
59,000	.011067	.005400	....	....	
60,000	.011333	.000266	....	....	
62,000	.012500	.001167	....	....	
64,000	.014467	.001967	....	....	
68,000	.017167	.002700	....	....	
72,000	.021333	.004166	....	....	
76,000	.024833	.003500	....	....	
80,000	.030167	.005334	....	....	
84,000	.035000	.004833	....	....	
88,000	.042000	.007000	....	....	
92,000	.050833	.008833	....	....	
96,000	.065000	.004167	....	....	
102,450	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	102,450
Elastic limit per square inch of original section	do	56,000
Elongation per inch after rupture	inch	.2100
Elongation per inch under strain at elastic limit	do	.002133
Reduction in diameter at point of rupture	do	.165
Reduction in area after rupture, per cent of original section		54.6
Position of rupture		1".10 from neck
Character of broken surface		fine silky
Elongation of inch sections		".10, ".19, ".34*

No. 6470.

From breech of barrel too hard to drill, annealed at low heat in charcoal. Open-hearth steel.

Marks, S 4.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.001000	.000367	....	....	
35,000	.001100	.000100	....	....	
40,000	.001333	.000233	....	....	
50,000	.001667	.000334	....	....	
60,000	.002033	.000366	....	....	
61,000	.002067	.000034	....	....	
62,000	.002100	.000033	....	....	
63,000	.002133	.000033	....	....	
64,000	.002167	.000034	....	....	
65,000	.002200	.000033	....	....	
66,000	.002267	.000067	....	....	Elastic limit.
67,000	.016167	.013900	....	....	
68,000	.016500	.000433	....	....	
69,000	.016800	.000300	....	....	
70,000	.017433	.000633	....	....	
72,000	.019833	.002400	....	....	
76,000	.021667	.001834	....	....	
80,000	.025500	.003833	....	....	
84,000	.029333	.003833	....	....	
88,000	.030333	.001000	....	....	
92,000	.039433	.009100	....	....	
96,000	.046833	.007400	....	....	
108,800	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	108,800
Elastic limit per square inch of original section	do...	66,000
Elongation per inch after rupture	inch..	.2033
Elongation per inch under strain at elastic limit	do...	.002267
Reduction in diameter at point of rupture	do...	.165
Reduction in area after rupture, per cent of original section		54.6
Position of rupture		".90 from neck
Character of broken surface		fine silky
Elongation of inch sections		".37*, ".14, ".10

No. 6471.

From breech end of barrel too hard to drill, annealed at low heat in lime.

Marks, S 5.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.
Same metal as No. 6470.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	.0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000267	.000200	....	....	
20,000	.000600	.000833	....	....	
30,000	.000967	.000367	....	....	
35,000	.001100	.000183	....	....	
40,000	.001300	.000200	....	....	
42,000	.001367	.000067	....	....	
44,000	.001433	.000066	....	....	
46,000	.001500	.000067	....	....	
48,000	.001567	.000067	....	....	
49,000	.001633	.000066	....	....	Elastic limit.
50,000	.002833	.001200	....	....	
51,000	.005367	.002534	....	....	
52,000	.006333	.000966	....	....	
53,000	.006400	.000067	....	....	
54,000	.006767	.000367	....	....	
56,000	.008000	.001233	....	....	
58,000	.008633	.000633	....	....	
60,000	.010000	.001367	....	....	
64,000	.012500	.002500	....	....	
68,000	.014667	.002167	....	....	
72,000	.017500	.002833	....	....	
76,000	.020167	.002667	....	....	
80,000	.023333	.003166	....	....	
84,000	.027333	.004000	....	....	
88,000	.031333	.004000	....	....	
92,000	.036500	.005167	....	....	
96,000	.041667	.005167	....	....	
109,450	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	109.450
Elastic limit per square inch of original section ....do...	49,000
Elongation per inch after rupture ....inch..	.1733
Elongation per inch under strain at elastic limit ....do...	.001633
Reduction in diameter at point of rupture ....do...	.085
Reduction in area after rupture, per cent of original section....................	30.7
Position of rupture	1″.45 from neck
Character of broken surface....................	fine granular 50 per cent, silky 50 per cent
Elongation of inch sections....................	″.14, ″.26*, ″.12

No. 6472.

From breech of barrel, heated to about 1,350° and annealed in charcoal.

Marks, S 2.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.
Same metal as No. 6470.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000167	.000167	0.		
10,000	.000333	.000166			
20,000	.000667	.000334			
30,000	.001000	.000333			
35,000	.001200	.000200			
40,000	.001367	.000167			
50,000	.001700	.000333			
51,000	.001733	.000033			
52,000	.001800	.000067			
53,000	.001833	.000033			
54,000	.001867	.000034			
55,000	.001900	.000033			
56,000	.001967	.000067			Elastic limit.
57,000	.002167 .002533	.000200 .000366			
58,000	.002900	.000367			
59,000	.003167	.000267			
60,000	.003433	.000266			
64,000	.006167	.002734			
68,000	.007500	.001333			
72,000	.009667	.002167			
76,000	.011567	.001900			
80,000	.013767	.002200			
84,000	.016333	.002566			
88,000	.018600	.002267			
92,000	.021000	.002400			
96,000	.023667	.002667			
100,000	.027333	.003666			
104,000	.030500	.003167			
125,450					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	125,450
Elastic limit per square inch of original section	do...	56,000
Elongation per inch after rupture	inch..	.1233
Elongation per inch under strain at elastic limit	do...	.001967
Reduction in diameter at point of rupture	do...	.065
Reduction in area after rupture, per cent of original section		23.9
Position of rupture		″.85 from neck
Character of broken surface		fine granular, with dull center
Elongation of inch sections		″.19*, ″.10, ″.08

No. 6503.

Marks, 2.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Samples marked 2 to 6 inclusive taken from a lot of bars furnished by the steel makers.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001300	.000333	....	....	
50,000	.001633	.000333	0.	....	
60,000	.002000	.000367	....	....	
67,000	.002267	.000267	....	....	
68,000	.002300	.000033	....	....	Elastic limit.
69,000	.007100	.004800	....	....	
70,000	.007600	.000500	....	....	
71,000	.008000	.000400	....	....	
72,000	.008900	.000900	....	....	
74,000	.009767	.000867	....	....	
76,000	.011300	.001533	....	....	
80,000	.013667	.002367	....	....	
84,000	.016500	.002833	....	....	
88,000	.020000	.003500	....	....	
92,000	.022833	.002833	....	....	
96,000	.026500	.003667	....	....	
100,000	.030833	.004333	....	....	
104,000	.034333	.003500	....	....	
108,000	.040000	.005667	....	....	
112,000	.048833	.008833	....	....	
121,400	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	121,400
Elastic limit per square inch of original section	do	68,000
Elongation per inch after rupture	inch	.1867
Elongation per inch under strain at elastic limit	do	.002300
Reduction in diameter at point of rupture	do	.155
Reduction in area after rupture, per cent of original section		51.9
Position of rupture		1″.6 from neck
Character of broken surface		fine silky
Elongation of inch sections		″.11, ″.34*, ″.11

No. 6504.

Marks, 3.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	....	....	
10,000	.000333	.000233	....	....	
20,000	.000667	.000334	....	....	
30,000	.001000	.000333	....	....	
40,000	.001333	.000333	....	....	
50,000	.001667	.000334	....	....	
60,000	.002033	.000366	....	....	
70,000	.002400	.000367	....	....	
71,000	.002467	.000067	....	....	
72,000	.002500	.000033	....	....	Elastic limit.
73,000	.009000	.006500	....	....	
74,000	.009433	.000433	....	....	
75,000	.009933	.000500	....	....	
76,000	.010667	.000734	....	....	
80,000	.013167	.002500	....	....	
84,000	.016267	.003100	....	....	
88,000	.018900	.002633	....	....	
92,000	.022100	.003200	....	....	
96,000	.026000	.003900	....	....	
100,000	.029333	.003333	....	....	
104,000	.033900	.004567	....	....	
108,000	.038667	.004767	....	....	
112,000	.045833	.007166	....	....	
122,850	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	122,850
Elastic limit per square inch of original section	do...	72,000
Elongation per inch after rupture	inch..	.1867
Elongation per inch under strain at elastic limit	do...	.002500
Reduction in diameter at point of rupture	do...	.155
Reduction in area after rupture, per cent of original section		51.9
Position of rupture		1″.6 from neck
Character of broken surface		fine silky
Elongation of inch sections		″.11, ″.33*, ″.12

No. 6505.

Marks, 4.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001300	.000333	....	....	
50,000	.001633	.000333	0.	....	
60,000	.001967	.000334	....	....	
65,000	.002167	.000200	....	....	
66,000	.002200	.000033	....	....	
67,000	.002233	.000033	....	....	Elastic limit.
68,000	.008333	.006100	....	....	
69,000	.008667	.000334	....	....	
70,000	.009300	.000633	....	....	
72,000	.010333	.001033	....	....	
74,000	.011400	.001067	....	....	
76,000	.012733	.001333	....	....	
80,000	.015667	.002934	....	....	
84,000	.018667	.003000	....	....	
88,000	.021767	.003100	....	....	
92,000	.025733	.003966	....	....	
96,000	.028933	.003200	....	....	
100,000	.034333	.005400	....	....	
104,000	.039333	.005000	....	....	
108,000	.046433	.007100	....	....	
112,000	.056167	.009734	....	....	
119,600	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	119,600
Elastic limit per square inch of original section ....do...	67,000
Elongation per inch after rupture ....inch..	.1833
Elongation per inch under strain at elastic limit ....do...	.002233
Reduction in diameter at point of rupture ....do...	.135
Reduction in area after rupture, per cent of original section	46.2
Position of rupture	1″.55 from neck
Character of broken surface	fine silky
Elongation of inch sections	″.12, ″.31*, ″.12

No. 6506.

Marks, 5.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001333	.000366	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002033	.000366	....	....	
65,000	.002267	.000234	....	....	
66,000	.002300	.000033	....	....	
67,000	.002367	.000067	....	....	Elastic limit.
68,000	.003867	.001500	....	....	
69,000	.006000	.002133	....	....	
70,000	.006667	.000667	....	....	
72,000	.007633	.000966	....	....	
76,000	.010000	.002367	....	....	
80,000	.012667	.002667	....	....	
84,000	.015033	.002366	....	....	
88,000	.018000	.002967	....	....	
92,000	.020733	.002733	....	....	
96,000	.024100	.003367	....	....	
100,000	.027567	.003467	....	....	
104,000	.031333	.003766	....	....	
108,000	.035667	.004334	....	....	
112,000	.041833	.006166	....	....	
124,550	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	124,550
Elastic limit per square inch of original section	do...	67,000
Elongation per inch after rupture	inch..	.1733
Elongation per inch under strain at elastic limit	do...	.002367
Reduction in diameter at point of rupture	do...	.135
Reduction in area after rupture, per cent of original section		46.2
Position of rupture		at middle of stem
Character of broken surface		fine silky
Elongation of inch sections		".10, ".32*, ".10

No. 6507.

Marks, 6.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001300	.000333	....	....	
50,000	.001667	.000367	0.	....	
60,000	.002000	.000333	....	....	
66,000	.002233	.000233	....	....	
67,000	.002300	.000067	....	....	Elastic limit.
68,000	.007000	.004700	....	....	
69,000	.007600	.000600	....	....	
70,000	.007967	.000367	....	....	
72,000	.009400	.001433	....	....	
76,000	.012333	.002933	....	....	
80,000	.015100	.002767	....	....	
84,000	.018000	.002900	....	....	
88,000	.021167	.003167	....	....	
92,000	.025000	.003833	....	....	
96,000	.028967	.003967	....	....	
100,000	.033000	.004033	....	....	
104,000	.039167	.006167	....	....	
108,000	.045667	.006500	....	....	
112,000	.056000	.010333	....	....	
118,550	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	**pounds**	**118,550**
Elastic limit per square inch of original section	**do**	**67,000**
Elongation per inch after rupture	**inch**	**.1867**
Elongation per inch under strain at elastic limit	**do**	**.002300**
Reduction in diameter at point of rupture	**do**	**.155**
Reduction in area after rupture, per cent of original section		**51.9**
Position of rupture		**1".3 from neck**
Character of broken surface		**fine silky**
Elongation of inch sections		**".10, ".28*, ".18**

No. 6519.

From rolled barrel.
Marks, 2 R. Blue ends.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.		
10,000	.000333	.000233			
20,000	.000667	.000334			
30,000	.001000	.000333			
40,000	.001367	.000367			
50,000	.001700	.000333	0.		
60,000	.002033	.000333			
62,000	.002067	.000034			
63,000	.002100	.000033			
64,000	.002167	.000067			Elastic limit.
65,000	.014400	.002233			
66,000	.015333	.000933			
68,000	.016500	.001167			
70,000	.018667	.002167			
72,000	.020233	.001566			
76,000	.024000	.003767			
80,000	.028333	.004333			
84,000	.030333	.002000			
88,000	.039000	.008667			
92,000	.047000	.008000			
96,000	.057667	.010667			
104,550					Tensile strength.

General summary.

Tensile strength per square inch of original section....pounds..	104,550
Elastic limit per square inch of original section....do...	64,000
Elongation per inch after rupture....inch..	.1833
Elongation per inch under strain at elastic limit....do...	.002167
Reduction in diameter at point of rupture....do...	.175
Reduction in area after rupture, per cent of original section....	57.2
Position of rupture....	".65 from neck
Character of broken surface....	fine silky, serrated edges, cup shaped
Elongation of inch sections....	".37*, ".10, ".08

No. 6520.

From rolled barrel.
Marks, 3 R. Yellow ends.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	
5,000	.000100	.000100	0.	....	Initial load.
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.001000	.000367	....	....	
40,000	.001333	.000333	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002000	.000333	....	....	
64,000	.002133	.000133	....	....	
65,000	.002167	.000034	....	....	
66,000	.002233	.000066	....	....	Elastic limit.
	.011833	.009600	....	....	
67,000	.012167	.000334	....	....	
68,000	.012400	.000233	....	....	
70,000	.013733	.001333	....	....	
72,000	.015000	.001267	....	....	
76,000	.018333	.003333	....	....	
80,000	.021333	.003000	....	....	
84,000	.025000	.003667	....	....	
88,000	.029000	.004000	....	....	
92,000	.034000	.005000	....	....	
96,000	.039667	.005667	....	....	
100,000	.046667	.007000	....	....	
111,400	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section .... pounds..	111,400
Elastic limit per square inch of original section .... do...	66,000
Elongation per inch after rupture .... inch..	.1767
Elongation per inch under strain at elastic limit .... do...	.002233
Reduction in diameter at point of rupture .... do...	.165
Reduction in area after rupture, per cent of original section	54.6
Position of rupture	".7 from neck
Character of broken surface	fine silky, cup shaped
Elongation of inch sections	".08, ".11, ".34*

No. 6521.

From rolled barrel.
Marks, 4 R. White ends.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001300	.000333	....	....	
50,000	.001667	.000367	0.	....	
60,000	.002000	.000333	....	....	
62,000	.002100	.000100	....	....	
63,000	.002133	.000033	....	....	Elastic limit.
64,000	.008267	.006134	....	....	
65,000	.013167	.004900	....	....	
66,000	.014667	.001000	....	....	
68,000	.015667	.001000	....	....	
72,000	.018667	.003000	....	....	
76,000	.022500	.003833	....	....	
80,000	.026667	.004167	....	....	
84,000	.031000	.004333	....	....	
88,000	.036667	.005667	....	....	
92,000	.043333	.006666	....	....	
96,000	.052000	.008667	....	....	
107,550	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	107,550
Elastic limit per square inch of original section	do...	63,000
Elongation per inch after rupture	inch..	.2167
Elongation per inch under strain at elastic limit	do...	.002133
Reduction in diameter at point of rupture	do...	.165
Reduction in area after rupture, per cent of original section		54.6
Position of rupture		1".2 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		".12, ".21, ".32*

No. 6522.

From rolled barrel.
Marks, 5 R. Orange ends.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.001000	.000367	....	....	
40,000	.001333	.000333	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002000	.000333	....	....	
65,000	.002167	.000167	....	....	
66,000	.002200	.000033	....	....	
67,000	.002267 .012067	.000067 .009800	....	....	Elastic limit.
68,000	.012833	.000766	....	....	
70,000	.013700	.000867	....	....	
72,000	.015167	.001467	....	....	
76,000	.018000	.002833	....	....	
80,000	.021333	.003333	....	....	
84,000	.024833	.003500	....	....	
88,000	.028667	.003834	....	....	
92,000	.033333	.004666	....	....	
96,000	.039000	.005667	....	....	
100,000	.045667	.006667	....	....	
112,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	112,000
Elastic limit per square inch of original section	do...	67,000
Elongation per inch after rupture	inch..	.2000
Elongation per inch under strain at elastic limit	do...	.002267
Reduction in diameter at point of rupture	do...	.165
Reduction in area after rupture, per cent of original section		54.6
Position of rupture		″.85 from neck
Character of broken surface		fine silky, serrated edges, cup shaped
Elongation of inch sections		″.37*, ″.13, ″.10

No. 6523.

From rolled barrel.
Marks, 6 R. Black ends.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000183	.000183	0.	....	
10,000	.000333	.000200	....	....	
20,000	.000667	.000334	....	....	
30,000	.001000	.000333	....	....	
40,000	.001333	.000333	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002033	.000366	....	....	
65,000	.002233	.000200	....	....	
66,000	.002300	.000067	....	....	Elastic limit.
67,000	.016000	.003700	....	....	
68,000	.017000	.001000	....	....	
70,000	.018500	.001500	....	....	
72,000	.020833	.001833	....	....	
76,000	.024433	.004100	....	....	
80,000	.028767	.004334	....	....	
84,000	.034000	.005233	....	....	
88,000	.040000	.006000	....	....	
92,000	.047667	.007667	....	....	
104,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section .... pounds..	104,900
Elastic limit per square inch of original section .... do...	66,000
Elongation per inch after rupture .... inch..	.2067
Elongation per inch under strain at elastic limit .... do...	.002300
Reduction in diameter at point of rupture .... do...	.175
Reduction in area after rupture, per cent of original section	57.2
Position of rupture	".75 from neck
Character of broken surface	fine silky, cup shaped
Elongation of inch sections	".39, ".12, ".10

No. 6720.

Marks, S. J. B.—Blank.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.001000	.000367	....	....	
40,000	.001333	.000333	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002000	.000333	....	....	
70,000	.002367	.000367	....	....	
75,000	.002600	.000233	....	....	
77,000	.002700	.000100	....	....	Elastic limit
78,000	.004167	.001467	....	....	
79,000	.007333	.003166	....	....	
80,000	.010333	.003000	....	....	
84,000	.020167	.009834	....	....	
88,000	.029167	.009000	....	....	
92,000	.040333	.011166	....	....	
96,000	.057333	.017000	....	....	
100,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	100,900
Elastic limit per square inch of original section	do...	77,000
Elongation per inch after rupture	inch..	.1933
Elongation per inch under strain at elastic limit	do...	.002700
Reduction in diameter at point of rupture	do...	.195
Reduction in area after rupture, per cent of original section		62.2
Position of rupture		″.95 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		″.39*, ″.11, ″.08

No. 6754.

From barrel oil tempered at butt.
Marks, $^{\text{S J B}}_{\text{O T}}$
Sectional area, .25 square inch.
Gauged length, 1″.
From the same lot of blanks as No. 6720.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.0001	.0001	0.		
10,000	.0004	.0003			
20,000	.0007	.0003			
30,000	.0010	.0003			
40,000	.0013	.0003			
50,000	.0017	.0004			
60,000	.0021	.0004			
70,000	.0024	.0003	0.		
80,000	.0027	.0003			
90,000	.0030	.0003			
100,000	.0034	.0004			
105,000	.0036	.0002			
110,000	.0041	.0005	.0004	.0004	Elastic limit.
111,000	.0043	.0002			
112,000	.0046	.0003			
113,000	.0048	.0002			
114,000	.0053	.0005			
126,880					
(1)					
0.	.01				Present elongation.
(2)					
135,920					Tensile strength.

[1] Test discontinued. Stripped threads in holder dies.
[2] New holder dies made and test completed.

General summary.

Tensile strength per square inch of original section……pounds..	135,920
Elastic limit per square inch of original section……do…	110,000
Elongation per inch after rupture……inch..	.09
Elongation per inch under strain at elastic limit……do…	.0041
Character of broken surface……	silky, cup shaped

No. 6755.

From barrel oil tempered at butt.
Marks, $\overset{S\ J\ B}{O\ T}$
Sectional area, .25 square inch.
Gauged length, 1″.
From the same lot of blanks as No. 6720.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.0001	.0001	0.	....	
10,000	.0003	.0002	....	....	
20,000	.0006	.0003	....	....	
30,000	.0010	.0004	0.	....	
40,000	.0013	.0003	....	....	
50,000	.0017	.0004	....	....	
60,000	.0021	.0004	....	....	
70,000	.0024	.0003	0.	....	
78,000	.0029	.0005	....	....	
79,000	.0030	.0001	....	....	Elastic limit.
80,000	.0034	.0004	....	....	
81,000	.0039	.0005	....	....	
82,000	.0054	.0015	....	....	
83,000	.0065	.0011	....	....	
84,000	.0084	.0021	....	....	
85,000	.0117	.0033	....	....	
86,000	.0138	.0021	....	....	
88,000	.0188	.0050	....	....	
92,000	.0270	.0082	....	....	
96,000	.04	.013	....	....	
100,000	.06	.02	....	....	
104,000	.09	.03	....	....	
104,960	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	104,960
Elastic limit per square inch of original section	do...	79,000
Elongation per inch after rupture	inch..	.26
Elongation per inch under strain at elastic limit	do...	.0030
Reduction in diameter at point of rupture (exterior)	do...	.1106
Character of broken surface		silky, cup shaped

No. 6735.

Marks, S & J.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.
Specimen from a blank received from the steel maker.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.001000	.000367	....	....	
40,000	.001333	.000333	....	....	
50,000	.001667	.000334	....	....	
60,000	.002000	.000333	....	....	
66,000	.002233	.000233	....	....	Elastic limit.
67,000	.002333	.000100	....	....	
68,000	.013333	.011000	....	....	
72,000	.016167	.002834	....	....	
76,000	.019667	.003500	....	....	
80,000	.023333	.003666	....	....	
84,000	.027833	.004500	....	....	
88,000	.032667	.004834	....	....	
92,000	.038667	.006000	....	....	
96,000	.046000	.007333	....	....	
100,000	.055500	.009500	....	....	
109,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	109,000
Elastic limit per square inch of original section	do...	66,000
Elongation per inch after rupture	inch..	.1983
Elongation per inch under strain at elastic limit	do...	.002233
Reduction in diameter at point of rupture	do...	.155
Reduction in area after rupture, per cent of original section		51.9
Position of rupture		″.9 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		″.11, ″.13, ″.34*

SPECIMENS FROM TWO BARRELS, OIL TEMPERED AT A LOW HEAT ALONG THE LENGTH OF POWDER CHAMBER.

No. 6609.

From middle of length of barrel untreated part.
Marks, S (1).
Exterior diameter, ".4662.
Interior diameter, ".3000.
Sectional area, .10 square inch.
Gauged length, 3".
From the same barrel as No. 9678.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.001000	.000367	....	....	
40,000	.001367	.000367	0.	....	
47,000	.001667	.000300	....	....	
48,000	.001733	.000066	....	....	Elastic limit.
49,000	.002733	.001000	....	....	
50,000	.003000	.000267	....	....	
51,000	.003333	.000333	....	....	
52,000	.003700	.000367	....	....	
54,000	.004500	.000800	....	....	
56,000	.005333	.000833	....	....	
58,000	.006333	.001000	....	....	
60,000	.007333	.001000	....	....	
64,000	.009667	.002334	....	....	
68,000	.012000	.002333	....	....	
72,000	.014400	.002400	....	....	
76,000	.017333	.002933	....	....	
80,000	.020000	.002667	....	....	
84,000	.023000	.003000	....	....	
88,000	.026333	.003333	....	....	
92,000	.030500	.004167	....	....	
96,000	.035000	.004500	....	....	
100,000	.042000	.007000	....	....	
113,200	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	113,200
Elastic limit per square inch of original section	do...	48,000
Elongation per inch after rupture	inch..	.1167
Elongation per inch under strain at elastic limit	do...	.001733
Reduction in diameter at point of rupture (exterior)	do...	.0462
Position of rupture		".5 from neck
Character of broken surface		granular
Elongation of inch sections		".17*, ".09, ".09

No. 6610.

From middle of length of barrel, untreated part.
Marks, S (2).
Exterior diameter, ″.4662.
Interior diameter, ″.3000.
Sectional area, .10 square inch.
Gauged length, 3″.
From the same barrel as No. 9679.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.001000	.000367	....	....	
40,000	.001367	.000367	0.	....	
45,000	.001567	.000200	....	....	
46,000	.001667	.000200	....	....	
47,000	.001700	.000033	.000067	.000067	
48,000	.001767	.000067	....	....	Elastic limit.
49,000	.002067	.000300	....	....	
50,000	.003333	.001266	....	....	
51,000	.004833	.001500	....	....	
52,000	.005333	.000500	....	....	
54,000	.006500	.001167	....	....	
56,000	.007667	.001167	....	....	
60,000	.010100	.002433	....	....	
64,000	.012333	.002233	....	....	
68,000	.015000	.002667	....	....	
72,000	.017667	.002667	....	....	
76,000	.021000	.003333	....	....	
80,000	.024500	.003500	....	....	
84,000	.028667	.004167	....	....	
88,000	.032667	.004000	....	....	
92,000	.038333	.005666	....	....	
96,000	.045667	.007334	....	....	
100,000	.056000	.010333	....	....	
107,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section..........pounds..	107,000
Elastic limit per square inch of original section..........do...	48,000
Elongation per inch after rupture..........inch..	.1333
Elongation per inch under strain at elastic limit..........do...	.001767
Reduction in diameter at point of rupture (exterior)..........do...	.0762
Position of rupture..........	″.6 from neck
Character of broken surface..........	fine granular
Elongation of inch sections..........	″.20*, ″.11, ″.09

No. 6579.

From middle of length of barrel.
Marks, S . . .
Exterior diameter, ".4662.
Interior diameter, ".3000.
Sectional area, .10 square inch.
Gauged length, 3".
From the same barrel as No. 9680.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001300	.000333	....	....	
50,000	.001667	.000367	0.	....	
60,000	.002000	.000333	....	....	
67,000	.002300	.000300	....	....	
68,000	.002333	.000033	....	....	Elastic limit.
69,000	.012333	.010000	....	....	
70,000	.013333	.001000	....	....	
72,000	.013867	.000534	....	....	
76,000	.015500	.001633	....	....	
80,000	.019000	.003500	....	....	
84,000	.022333	.003333	....	....	
88,000	.026000	.003667	....	....	
92,000	.030000	.004000	....	....	
96,000	.035000	.005000	....	....	
100,000	.041000	.006000	....	....	
114,400	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	114,400
Elastic limit per square inch of original section	do....	68,000
Elongation per inch after rupture	inch..	.1667
Elongation per inch under strain at elastic limit	do....	.002333
Reduction in diameter at point of rupture (exterior)	do....	.1062
Position of rupture		1".6 from neck
Character of broken surface		silky, cup shaped
Elongation of inch sections		".11, ".27*, ".12

No. 6579*a*.

From muzzle end of barrel.
Marks, S . . .
Exterior diameter, ″.4662.
Interior diameter, ″.3000.
Sectional area, .10 square inch.
Gauged length, 3″.
From the same barrel as No. 9680.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.001000	.000367	....	....	
40,000	.001333	.000333	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002033	.000366	....	....	
66,000	.002267	.000234	....	....	
67,000	.002333	.000066	....	....	Elastic limit.
68,000	.002867 .006000	.000534 .003133	....	....	
69,000	.006333	.000333	....	....	
70,000	.006600	.000267	....	....	
72,000	.007333	.000733	....	....	
76,000	.011000	.003667	....	....	
80,000	.015000	.004000	....	....	
84,000	.017500	.002500	....	....	
88,000	.021333	.003833	....	....	
92,000	.025000	.003667	....	....	
96,000	.028667	.003667	....	....	
100,000	.033333	.004666	....	....	
113,800	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	118,800
Elastic limit per square inch of original section	do...	67,000
Elongation per inch after rupture	inch..	.1000
Elongation per inch under strain at elastic limit	do...	.002333
Reduction in diameter at point of rupture (exterior)	do...	.1062
Position of rupture		″.85 from neck
Character of broken surface		silky, cup shaped
Elongation of inch sections		″.22*, ″.07, ″.03

No. 6580.

From middle of length of barrel.
Marks, S . . .
Exterior diameter, ″.4662.
Interior diameter, ″.3000.
Sectional area, .10 square inch.
Gauged length, 3″.
From the same barrel as No. 9681.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.001000	.000367	....	....	
40,000	.001333	.000333	....	....	
50,000	.001700	.000367	0.	....	
60,000	.002067	.000367	....	....	
65,000	.002267	.000200	....	....	
66,000	.002333	.000066	....	....	Elastic limit.
67,000	.010667	.008334	....	....	
68,000	.011667	.001000	....	....	
70,000	.012333	.000666	....	....	
72,000	.014000	.001667	....	....	
76,000	.017667	.003667	....	....	
80,000	.020333	.002666	....	....	
84,000	.024000	.003667	....	....	
88,000	.028000	.004000	....	....	
92,000	.033000	.005000	....	....	
96,000	.038333	.005333	....	....	
100,000	.045667	.007334	....	....	
111,800	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	111,800
Elastic limit per square inch of original section	do...	66,000
Elongation per inch after rupture	inch...	.1733
Elongation per inch under strain at elastic limit	do...	.002333
Reduction in diameter at point of rupture (exterior)	do...	.1162
Position of rupture		1″.4 from neck
Character of broken surface		silky, cup shaped
Elongation of inch sections		″.12, ″.28*, ″.12

No. 6581.

From muzzle end of barrel.
Marks, S . . .
Exterior diameter, ″.4662.
Interior diameter, ″.3000.
Sectional area, .10 square inch.
Gauged length, 3″.
From the same barrel as No. 9681.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.001000	.000367	....	....	
40,000	.001333	.000333	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002083	.000366	....	....	
63,000	.002133	.000100	....	....	
64,000	.002200	.000067	....	....	Elastic limit.
65,000	.003733	.001533	....	....	
66,000	.005933	.002200	....	....	
68,000	.006600	.000667	....	....	
70,000	.006900	.000300	....	....	
72,000	.007667	.000767	....	....	
76,000	.011000	.003333	....	....	
80,000	.016267	.005267	....	....	
84,000	.018333	.002066	....	....	
88,000	.022333	.004000	....	....	
92,000	.025667	.003334	....	....	
96,000	.030333	.004666	....	....	
100,000	.035500	.005167	....	....	
112,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	112,000
Elastic limit per square inch of original section	do...	64,000
Elongation per inch after rupture	inch..	.1267
Elongation per inch under strain at elastic limit	do...	.002200
Reduction in diameter at point of rupture	do...	.1162
Position of rupture		1″.07 from neck
Character of broken surface		silky, cup shaped
Elongation of inch sections		″.08, ″.11, ″.24*

No. 6607.

Marks, H.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.001000	.000367	....	....	
40,000	.001333	.000333	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002000	.000333	....	....	
70,000	.002400	.000400	....	....	Elastic limit.
71,000	.003333	.000933	....	....	
72,000	.004500	.001167	....	....	
73,000	.005133	.000633	....	....	
74,000	.005667	.000534	....	....	
76,000	.006833	.001166	....	....	
80,000	.009200	.002367	....	....	
84,000	.011733	.002533	....	....	
88,000	.014333	.002600	....	....	
92,000	.017000	.002667	....	....	
96,000	.019833	.002833	....	....	
100,000	.023333	.003500	....	....	
104,000	.026333	.003000	....	....	
108,000	.030500	.004167	....	....	
112,000	.034667	.004167	....	....	
116,000	.040000	.005333	....	....	
120,000	.047667	.007667	....	....	
130,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	130,100
Elastic limit per square inch of original section ....do...	70,000
Elongation per inch after rupture ....inch..	.1600
Elongation per inch under strain at elastic limit ....do...	.002400
Reduction in diameter at point of rupture ....do...	.125
Reduction in area after rupture, per cent of original section	43.3
Position of rupture	1″.5 from neck
Character of broken surface	fine silky, cup shaped
Elongation of inch sections	″.11, ″.27*, ″.10

No. 6725.

Hollow specimen from breech end of barrel.
Without oil tempering.
Marks, H. Same steel as 6607.
Sectional area, .25 square inch.
Gauged length, 1″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.0002	.0002			
10,000	.0004	.0002			
20,000	.0006	.0002			
30,000	.0010	.0004			
40,000	.0014	.0004			
50,000	.0019	.0005			
60,000	.0026	.0007			Elastic limit.
	.0030	.0004			
61,000	.0067	.0037			
62,000	.0079	.0012			
64,000	.0102	.0023			
68,000	.0122	.0020			
72,000	.0150	.0028			
76,000	.0180	.0030			
80,000	.0218	.0038			
112,880					Tensile strength.

General summary.

Tensile strength per square inch of original section	**pounds..**	**112,880**
Elastic limit per square inch of original section	**do...**	**60,000**
Elongation per inch after rupture	**inch..**	**.19**
Elongation per inch under strain at elastic limit	**do...**	**.0026**
Reduction in diameter at point of rupture (exterior)	**do...**	**.0508**
Character of broken surface		**silky 50 per cent, fine granular 50 per cent**

No. 6727.

Hollow specimen from breech end of barrel.
Oil tempered.
Marks, H O T. Same steel as 6607.
Sectional area, .25 square inch.
Gauged length, 1″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.0002	.0002	....	....	
10,000	.0004	.0002	....	....	
20,000	.0007	.0003	....	....	
30,000	.0010	.0003	....	....	
40,000	.0013	.0003	....	....	
50,000	.0018	.0005	....	....	
60,000	.0021	.0003	....	....	
65,000	.0023	.0002	....	....	
66,000	.0026	.0003	....	....	Elastic limit.
67,000	.0102	.0076	....	....	
68,000	.0140	.0038	....	....	
70,000	.0155	.0015	....	....	
72,000	.0167	.0012	....	....	
74,000	.0185	.0018	....	....	
76,000	.0200	.0015	....	....	
80,000	.0240	.0040	....	....	
109,680	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	109,680
Elastic limit per square inch of original section	do...	66,000
Elongation per inch after rupture	inch..	.24
Elongation per inch under strain at elastic limit	do...	.0026
Reduction in diameter at point of rupture (exterior)	do...	.0803
Character of broken surface		silky, cup shaped

No. 6728.

Hollow specimen from breech end of barrel.
Oil tempered.
Marks, H O T. Same steel as 6607.
Sectional area, .25 square inch.
Gauged length, 1″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.0001	.0001	....	....	
10,000	.0003	.0002	....	....	
20,000	.0006	.0003	....	....	
30,000	.0010	.0004	....	....	
40,000	.0013	.0003	....	....	
50,000	.0016	.0003	....	....	
60,000	.0020	.0004	....	....	
61,000	.0021	.0001	....	....	Elastic limit.
62,000	.0050	.0029	....	....	
63,000	.0103	.0053	....	....	
64,000	.0120	.0017	....	....	
66,000	.0135	.0015	....	....	
68,000	.0148	.0013	....	....	
70,000	.0165	.0017	....	....	
72,000	.0186	.0021	....	....	
76,000	.0220	.0034	....	....	
106,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	106,000
Elastic limit per square inch of original section	do...	61,000
Elongation per inch after rupture	inch..	.22
Elongation per inch under strain at elastic limit	do...	.0021
Reduction in diameter at point of rupture (exterior)	do...	.0508
Character of broken surface		silky, cup shaped

No. 6733.

Marks, H.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000267	.000200	....	....	
20,000	.000600	.000333	....	....	
30,000	.000967	.000367	....	....	
40,000	.001300	.000333	....	....	
50,000	.001667	.000367	0.	....	
60,000	.002000	.000333	....	....	
67,000	.002267	.000267	....	....	Elastic limit.
68,000	.002700	.000433	....	....	
69,000	.003133	.000433	....	....	
70,000	.004500	.001367	....	....	
72,000	.005900	.001400	....	....	
76,000	.008333	.002433	....	....	
80,000	.010600	.002267	....	....	
84,000	.013167	.002567	....	....	
88,000	.016333	.003166	....	....	
92,000	.019000	.002667	....	....	
96,000	.022000	.003000	....	....	
100,000	.025333	.003333	....	....	
104,000	.029000	.003667	....	....	
108,000	.033000	.004000	....	....	
112,000	.039000	.006000	....	....	
127,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	127,000
Elastic limit per square inch of original section	do...	67,000
Elongation per inch after rupture	inch..	.1533
Elongation per inch under strain at elastic limit	do...	.002267
Reduction in diameter at point of rupture	do...	.135
Reduction in area after rupture, per cent of original section		46.2
Position of rupture		″.8 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		″.09, ″.10, ″.27*

No. 6836.

Marks, H 1.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000333	.000233	....	....	
20,000	.000667	.000334	....	....	
30,000	.001000	.000333	....	....	
40,000	.001367	.000367	....	....	
50,000	.001700	.000333	0.	....	
60,000	.002033	.000333	....	....	
70,000	.002400	.000367	....	....	Elastic limit.
71,000	.002533	.000133	....	....	
72,000	.004500	.001967	....	....	
74,000	.005333	.000833	....	....	
76,000	.006667	.001334	....	....	
80,000	.009000	.002333	....	....	
84,000	.011333	.002333	....	....	
88,000	.013500	.002167	....	....	
92,000	.016000	.002500	....	....	
96,000	.019000	.003000	....	....	
100,000	.021667	.002667	....	....	
104,000	.025000	.003333	....	....	
131,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	131,100
Elastic limit per square inch of original section	do...	70,000
Elongation per inch after rupture	inch..	.1533
Elongation per inch under strain at elastic limit	do...	.002400
Reduction in diameter at point of rupture	do...	.125
Reduction in area after rupture, per cent of original section		43.3
Position of rupture		".9 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		".26*, ".12, ".08

No. 6838.

From rolled barrel at butt.
Marks, H 1 R B. Same steel as 6836.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000667	.000367	....	....	
30,000	.001000	.000333	....	....	
40,000	.001333	.000333	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002000	.000333	....	....	
70,000	.002367	.000367	....	....	
77,000	.002633	.000266	....	....	
78,000	.002700	.000067	....	....	Elastic limit.
79,000	.009667	.006967	....	....	
80,000	.010333	.000666	....	....	
84,000	.012667	.002334	....	....	
88,000	.015333	.002666	....	....	
92,000	.018000	.002667	....	....	
96,000	.021000	.003000	....	....	
100,000	.024000	.003000	....	....	
104,000	.027667	.003667	....	....	
108,000	.031667	.004000	....	....	
129,050	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	129,050
Elastic limit per square inch of original section .... do...	78,000
Elongation per inch after rupture .... inch..	.1667
Elongation per inch under strain at elastic limit .... do...	.002700
Reduction in diameter at point of rupture .... do...	.145
Reduction in area after rupture, per cent of original section	49.1
Position of rupture	1″.50 from neck
Character of broken surface	fine silky
Elongation of inch sections	″.20, ″.21*, ″.09

No. 6839.

From rolled barrel at butt, annealed.
Marks, H 1 R A B. Same steel as 6836.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.		
10,000	.000333	.000233			
20,000	.000667	.000334			
30,000	.001000	.000333			
40,000	.001333	.000333			
50,000	.001667	.000334	0.		
60,000	.002000	.000333			
70,000	.002333	.000333			
72,000	.002400	.000067			Elastic limit.
	.016000	.013600			
73,000	.017000	.001000			
74,000	.018000	.001000			
76,000	.019833	.001833			
80,000	.023833	.004000			
84,000	.027833	.004000			
88,000	.032167	.004334			
92,000	.037667	.005500			
96,000	.044667	.007000			
110,200					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	110,200
Elastic limit per square inch of original section	do...	72,000
Elongation per inch after rupture	inch..	.1900
Elongation per inch under strain at elastic limit	do...	.002400
Reduction in diameter at point of rupture	do...	.175
Reduction in area after rupture, per cent of original section		57.2
Position of rupture		".7 from neck
Character of broken surface		fine silky, serrated
Elongation of inch sections		".09, ".11, ".37*

No. 6916.

Finished barrel, oil tempered.
Marks, $\overset{H}{O}T$. Same steel as 6836.
Sectional area, .25 square inch.
Gauged length, 1".
Specimen taken over powder chamber.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.0002	.0002	0.	....	
10,000	.0004	.0002	....	....	
20,000	.0007	.0003	....	....	
30,000	.0010	.0003	....	....	
40,000	.0014	.0004	....	....	
50,000	.0018	.0004	0.	....	
60,000	.0022	.0004	....	....	
63,000	.0024	.0002	....	....	Elastic limit.
64,000	.0075	.0051	....	....	
65,000	.0087	.0012	....	....	
66,000	.0110	.0023	....	....	
68,000	.0125	.0015	....	....	
70,000	.0140	.0015	....	....	
72,000	.0150	.0010	....	....	
76,000	.0180	.0030	....	....	
80,000	.0214	.0034	....	....	
112,800	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section......pounds..	112,800
Elastic limit per square inch of original section......do...	63,000
Elongation per inch after rupture......inch..	.15
Elongation per inch under strain at elastic limit......do...	.0024
Reduction in diameter at point of rupture (exterior)......do...	.0403
Character of broken surface......	silky, cup shaped

No. 6623.

Marks, L.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.
From sample of barrel steel.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000667	.000367	....	....	
30,000	.001000	.000333	....	....	
40,000	.001333	.000333	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002033	.000366	....	....	
66,000	.002333	.000300	....	....	
67,000	.002400	.000067	....	....	Elastic limit.
68,000	.008000	.005600	....	....	
69,000	.008667	.000667	....	....	
70,000	.009167	.000500	....	....	
72,000	.010000	.000833	....	....	
76,000	.014000	.004000	....	....	
80,000	.016667	.002667	....	....	
84,000	.020000	.003333	....	....	
88,000	.023333	.003333	....	....	
92,000	.027167	.003884	....	....	
96,000	.031667	.004500	....	....	
100,000	.037000	.005333	....	....	
104,000	.043000	.006000	....	....	
108,000	.051000	.008000	....	....	
117,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ...pounds..	117,900
Elastic limit per square inch of original section ...do...	67,000
Elongation per inch after rupture ...inch..	.1700.
Elongation per inch under strain at elastic limit ...do...	.002400
Reduction in diameter at point of rupture ...do...	.105
Reduction in area after rupture, per cent of original section ...	37.1
Position of rupture ...	1″.2 from neck
Character of broken surface ...	fine silky, cup shaped
Elongation of inch sections ...	″.20*, ″.21*. ″.10

No. 6734.

Marks, L.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000333	.000233	....	....	
20,000	.000667	.000334	....	....	
30,000	.001000	.000333	....	....	
40,000	.001367	.000367	....	....	
50,000	.001700	.000333	0.	....	
60,000	.002033	.000333	....	....	
68,000	.002267	.000234	....	....	
69,000	.002333	.000066	....	....	Elastic limit.
70,000	.010333	.008000	....	....	
72,000	.011033	.000700	....	....	
76,000	.014500	.003467	....	....	
80,000	.017167	.002667	....	....	
84,000	.020667	.003500	....	....	
88,000	.023667	.003000	....	....	
92,000	.027667	.004000	....	....	
96,000	.032333	.004666	....	....	
100,000	.037833	.005500	....	....	
117,050	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	117,050
Elastic limit per square inch of original section	do...	69,000
Elongation per inch after rupture	inch..	.183
Elongation per inch under strain at elastic limit	do...	.00233
Reduction in diameter at point of rupture	do...	.1[illegible]5
Reduction in area after rupture, per cent of original section		46.2
Position of rupture		1".6 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		".12, ".33*, ".10

No. 6726.

Hollow specimen from breech end of barrel.
Without oil tempering.
Marks, L. Same steel as 6734.
Sectional area, .25 square inch.
Gauged length, 1″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.0002	.0002	....	....	
10,000	.0004	.0002	....	....	
20,000	.0007	.0003	....	....	
30,000	.0010	.0003	....	....	
40,000	.0014	.0004	....	....	
50,000	.0018	.0004	....	....	
58,000	.0023	.0005	....	....	Elastic limit.
59,000	.0027	.0004	....	....	
60,000	.0115	.0088	....	....	
62,000	.0131	.0016	....	....	
64,000	.0148	.0017	....	....	
68,000	.0181	.0033	....	....	
72,000	.0220	.0039	....	....	
103,120	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	103,120
Elastic limit per square inch of original section	do...	58,000
Elongation per inch after rupture	inch..	.29
Elongation per inch under strain at elastic limit	do...	.0023
Reduction in diameter at point of rupture (exterior)	do...	.0708
Character of broken surface		fine silky

No. 6729.

Hollow specimen from breech end of barrel.
Oil tempered.
Marks, L O T. Same steel as 6734.
Sectional area, .25 square inch.
Gauged length, 1″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.0002	.0002			
10,000	.0004	.0002			
20,000	.0007	.0003			
30,000	.0010	.0003			
40,000	.0014	.0004			
50,000	.0018	.0004			
58,000	.0021	.0003			
59,000	.0023	.0002			Elastic limit.
60,000	.0026	.0003			
	.0028	.0002			
61,000	.0085	.0057			
62,000	.0165	.0080			
64,000	.0180	.0015			
66,000	.0200	.0020			
68,000	.0220	.0020			
70,000	.0244	.0024			
98,480					Tensile strength.

General summary.

Tensile strength per square inch of original section .... pounds..	98,480
Elastic limit per square inch of original section .... do...	59,000
Elongation per inch after rupture .... inch..	.34
Elongation per inch under strain at elastic limit .... do...	.0023
Reduction in diameter at point of rupture (exterior) .... do...	.0308
Character of broken surface	silky, cup shaped

No. 6730.

Hollow specimen from breech end of barrel.
Oil tempered.
Marks, L O T. Same steel as 6734.
Sectional area, .25 square inch.
Gauged length, 1′.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.0002	.0002	....	....	
10,000	.0004	.0002	....	....	
20,000	.0007	.0003	....	....	
30,000	.0010	.0003	....	....	
40,000	.0013	.0003	....	....	
50,000	.0018	.0005	....	....	
58,000	.0020	.0002	....	....	Elastic limit.
59,000	.0092	.0072	....	....	
60,000	.0153	.0061	....	....	
62,000	.0164	.0011	....	....	
64,000	.0185	.0021	....	....	
66,000	.0195	.0010	....	....	
68,000	.0216	.0021	....	....	
70,000	.0246	.0030	....	....	
99,200	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	99,200
Elastic limit per square inch of original section	do	58,000
Elongation per inch after rupture	inch	.27
Elongation per inch under strain at elastic limit	do	.0020
Reduction in diameter at point of rupture (exterior)	do	.0708
Character of broken surface		silky, cup shaped

No. 6837.

Marks, L 1.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000333	.000233	....	....	
20,000	.000667	.000334	....	....	
30,000	.001000	.000333	....	....	
40,000	.001333	.000333	....	....	
50,000	.001700	.000367	0.	....	
60,000	.002033	.000333	....	....	
70,000	.002400	.000367	....	....	
71,000	.002433	.000033	....	....	Elastic limit.
72,000	.011000	.008567	....	....	
74,000	.012100	.001100	....	....	
76,000	.013667	.001567	....	....	
80,000	.016667	.003000	....	....	
84,000	.019833	.003166	....	....	
88,000	.023333	.003500	....	....	
92,000	.027333	.004000	....	....	
96,000	.031667	.004334	....	....	
100,000	.036667	.005000	....	....	
104,000	.042667	.006000	....	....	
118,550	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section .... pounds..	118,550
Elastic limit per square inch of original section .... do...	71,000
Elongation per inch after rupture .... inch..	.1800
Elongation per inch under strain at elastic limit .... do...	.002433
Reduction in diameter at point of rupture .... do...	.115
Reduction in area after rupture, per cent of original section	40.3
Position of rupture	1″.5 from neck
Character of broken surface	silky, cup shaped, trace of granulation
Elongation of inch sections	″.14, ″.29*, ″.11

No. 6840.

From rolled barrel at butt.
Marks, L 1 R B. Same steel as 6837.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.		
10,000	.000333	.000233			
20,000	.000667	.000334			
30,000	.001000	.000333			
40,000	.001333	.000333			
50,000	.001667	.000334	0.		
60,000	.002000	.000333			
70,000	.002333	.000333			
80,000	.002700	.000367			Elastic limit.
	.019000	.016300			
81,000	.019433	.000433			
82,000	.020233	.000800			
84,000	.022000	.001767			
88,000	.025833	.003833			
92,000	.030000	.004167			
96,000	.034667	.004667			
100,000	.040667	.006000			
117,000					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	117,000
Elastic limit per square inch of original section	do...	80,000
Elongation per inch after rupture	inch..	.2000
Elongation per inch under strain at elastic limit	do...	.002700
Reduction in diameter at point of rupture	do...	.155
Reduction in area after rupture, per cent of original section		51.9
Position of rupture		1″.5 from neck
Character of broken surface		fine silky
Elongation of inch sections		″.11, ″.84*, ″.15

No. 6841.

From rolled barrel at butt, annealed.
Marks, L 1 R A B. Same steel as 6837.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000133	.000133	0.	....	
10,000	.000333	.000200	....	....	
20,000	.000667	.000334	....	....	
30,000	.001000	.000333	....	....	
40,000	.001333	.000333	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002000	.000333	....	....	
68,000	.002333	.000333	....	....	Elastic limit.
	.012333	.010000	....	....	
69,000	.013667	.001334	....	....	
70,000	.015000	.001333	....	....	
72,000	.016500	.001500	....	....	
76,000	.020333	.003833	....	....	
80,000	.024667	.004334	....	....	
84,000	.028333	.003666	....	....	
88,000	.034667	.006334	....	....	
92,000	.040000	.005333	....	....	
109,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	109,000
Elastic limit per square inch of original section	do...	68,000
Elongation per inch after rupture	inch..	.1967
Elongation per inch under strain at elastic limit	do...	.002333
Reduction in diameter at point of rupture	do...	.125
Reduction in area after rupture, per cent of original section		43.8
Position of rupture		1″.22 from neck
Character of broken surface		silky serrated, trace of granulation
Elongation of inch sections		″.22*, ″.26*, ″.11

No. 6898.

Finished barrel, oil tempered.
Marks, L1-0T. Same steel as 6837.
Sectional area, .25 square inch.
Gauged length, 1".
Specimen taken over the powder chamber.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.0001	.0001	0.		
10,000	.0003	.0002			
20,000	.0006	.0003			
30,000	.0009	.0003			
40,000	.0013	.0004	0.		
50,000	.0017	.0004			
60,000	.0020	.0003			
69,000	.0024	.0004			Elastic limit.
70,000	.0075	.0051			
71,000	.0105	.0030			
72,000	.0125	.0020			
76,000	.0195	.0070			
80,000	.0220	.0025			
84,000	.0265	.0045			
111,040					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	111,040
Elastic limit per square inch of original section	do...	69,000
Elongation per inch after rupture	inch..	.20
Elongation per inch under strain at elastic limit	do...	.0024
Character of broken surface		silky, cup shaped

No. 6958.

Marks, L 2.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001300	.000333	....	....	
50,000	.001633	.000333	0.	....	
60,000	.001967	.000334	....	....	
70,000	.002333	.000366	....	....	
73,000	.002433	.000100	....	....	Elastic limit.
74,000	.002567	.000134	....	....	
75,000	.010733	.008166	....	....	
76,000	.011333	.000600	....	....	
78,000	.012500	.001167	....	....	
80,000	.014000	.001500	....	....	
84,000	.017067	.003067	....	....	
88,000	.020167	.003100	....	....	
92,000	.023667	.003500	....	....	
96,000	.027167	.003500	....	....	
100,000	.031667	.004500	....	....	
121,850	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	121,850
Elastic limit per square inch of original section	do...	73,000
Elongation per inch after rupture	inch..	.1567
Elongation per inch under strain at elastic limit	do...	.002433
Reduction in diameter at point of rupture	do...	.095
Reduction in area after rupture, per cent of original section		34.0
Position of rupture		at middle of stem
Character of broken surface		silky, interspersed with fine granulation
Elongation of inch sections		".10, ".26, ".11

No. 6697.

Marks, V H R M.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.001000	.000367	....	....	
40,000	.001333	.000333	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002000	.000333	....	....	
70,000	.002367	.000367	....	....	
80,000	.002767	.000400	....	....	
83,000	.002933	.000166	....	....	Elastic limit
84,000	.015000	.012067	....	....	
86,000	.016167	.001167	....	....	
88,000	.017667	.001500	....	....	
92,000	.020667	.003000	....	....	
96,000	.023667	.003000	....	....	
100,000	.027333	.003666	....	....	
104,000	.031000	.003667	....	....	
108,000	.036000	.005000	....	....	
126,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	126,000
Elastic limit per square inch of original section	do...	83,000
Elongation per inch after rupture	inch..	.1700
Elongation per inch under strain at elastic limit	do...	.002933
Reduction in diameter at point of rupture	do...	.155
Reduction in area after rupture, per cent of original section		51.9
Position of rupture		1″.1 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		″.28*, ″.15, ″.08

No. 6698.

Marks, V H R B.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001333	.000366	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002000	.000333	....	....	
70,000	.002333	.000333	....	....	
74,000	.002433	.000100	....	....	Elastic limit.
75,000	.010833	.008400	....	....	
76,000	.011833	.001000	....	....	
80,000	.014000	.002167	....	....	
84,000	.017167	.003167	....	....	
88,000	.020333	.003166	....	....	
92,000	.023667	.003334	....	....	
96,000	.027167	.003500	....	....	
100,000	.031000	.003833	....	....	
104,000	.036000	.005000	....	....	
122,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	122,100
Elastic limit per square inch of original section	do...	74,000
Elongation per inch after rupture	inch..	.1833
Elongation per inch under strain at elastic limit	do...	.002433
Reduction in diameter at point of rupture	do...	.145
Reduction in area after rupture, per cent of original section		49.1
Position of rupture		1".4 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		".14, ".31*, ".10

No. 6699.

Marks, V H R A M.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch,*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001333	.000366	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002033	.000366	....	....	
70,000	.002367	.000334	....	....	
76,000	.002567	.000200	....	....	Elastic limit.
77,000	.026000	.023433	....	....	
78,000	.027500	.001500	....	....	
80,000	.029500	.002000	....	....	
84,000	.035333	.005833	....	....	
88,000	.042000	.006667	....	....	
92,000	.051333	.009333	....	....	
104,050	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	104,050
Elastic limit per square inch of original section	do...	76,000
Elongation per inch after rupture	inch..	.2300
Elongation per inch under strain at elastic limit	do...	.002567
Reduction in diameter at point of rupture	do...	.175
Reduction in area after rupture, per cent of original section		57.2
Position of rupture		1″.28 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		″.12, ″.31*, ″.26*

No. 6700.

Marks, V H R A B.
Diameter, ″.505
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000.	.000633	.000333	....	....	
30,000	.001000	.000367	....	....	
40,000	.001333	.000333	....	....	
50,000	.001700	.000367	0.	....	
60,000	.002033	.000333	....	....	
70,000	.002367	.000334	....	....	
71,000	.002400	.000033	....	....	**Elastic limit.**
72,000	.017167	.014767	....	....	
74,000	.018333	.001166	....	....	
76,000	.019500	.001167	....	....	
80,000	.023667	.004167	....	....	
84,000	.027333	.003666	....	....	
88,000	.032333	.005000	....	....	
92,000	.038000	.005667	....	....	
96,000	.045333	.007333	....	....	
110,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	110,500
Elastic limit per square inch of original section ....do...	71,000
Elongation per inch after rupture ....inch..	.2200
Elongation per inch under strain at elastic limit ....do...	.002400
Reduction in diameter at point of rupture ....do...	.175
Reduction in area after rupture, per cent of original section	57.2
Position of rupture	1″.1 from neck
Character of broken surface	fine silky, cup shaped
Elongation of inch sections	″.13, ″.19, ″.34*

No. 6701.

Marks, V H R M 1.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.001000	.000367	....	....	
40,000	.001333	.000333	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002000	.000333	....	....	
70,000	.002367	.000367	....	....	
80,000	.002700	.000333	....	....	
86,000	.002967	.000267	....	....	
87,000	.003000	.000033	....	....	Elastic limit.
88,000	.018667	.015667	....	....	
90,000	.020000	.001333	....	....	
92,000	.021000	.001000	....	....	
96,000	.025000	.004000	....	....	
100,000	.028667	.003667	....	....	
104,000	.032333	.003666	....	....	
108,000	.037667	.005334	....	....	
112,000	.044000	.006333	....	....	
125,150	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	125,150
Elastic limit per square inch of original section	do...	87,000
Elongation per inch after rupture	inch..	.1767
Elongation per inch under strain at elastic limit	do...	.003000
Reduction in diameter at point of rupture	do...	.155
Reduction in area after rupture, per cent of original section		51.9
Position of rupture		1″.3 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections..		″.15, ″.30*, ″.08

No. 6702.

Marks, V H R B 1.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000333	.000233	....	....	
20,000	.000667	.000334	....	....	
30,000	.001000	.000333	....	....	
40,000	.001333	.000333	....	....	
50,000	.001700	.000367	0.	....	
60,000	.002033	.000333	....	....	
70,000	.002400	.000367	....	....	
74,000	.002567	.000167	....	....	Elastic limit.
75,000	.011333	.008766	....	....	
76,000	.012667	.001334	....	....	
80,000	.015333	.002666	....	....	
84,000	.018000	.002667	....	....	
88,000	.021333	.003333	....	....	
92,000	.024667	.003334	....	....	
96,000	.028500	.003833	....	....	
100,000	.033667	.005167	....	....	
104,000	.038667	.005000	....	....	
121,550	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	121,550
Elastic limit per square inch of original section ....do...	74,000
Elongation per inch after rupture ....inch..	.1900
Elongation per inch under strain at elastic limit ....do...	.002567
Reduction in diameter at point of rupture....do...	.155
Reduction in area after rupture, per cent of original section	51.9
Position of rupture....	1″.3 from neck
Character of broken surface....	fine silky, cup shaped
Elongation of inch sections....	″.15, ″.32*, ″.10

No. 6703.

Marks, V H R A M 1.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001333	.000366	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002033	.000366	....	....	
70,000	.002367	.000334	....	....	
76,000	.002633	.000266	....	....	Elastic limit.
77,000	.025667	.023034	....	....	
78,000	.026833	.001166	....	....	
80,000	.028667	.001834	....	....	
84,000	.034333	,005666	....	....	
88,000	.040667	.006334	....	....	
92,000	.047333	.006666	....	....	
101,450	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	101,450
Elastic limit per square inch of original section	do...	76,000
Elongation per inch after rupture	inch..	.2333
Elongation per inch under strain at elastic limit	do...	.002633
Reduction in diameter at point of rupture	do...	.185
Reduction in area after rupture, per cent of original section		59.8
Position of rupture		1″.28 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		″.14, ″.28*, ″.28*

No. 6704.

Marks, V H R A B 1.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.001000	.000367	....	....	
40,000	.001333	.000333	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002033	.000366	....	....	
70,000	.002367	.000334	....	....	
73,000	.002467	.000100	....	....	Elastic limit.
74,000	.019333	.016866	....	....	
76,000	.021667	.002334	....	....	
80,000	.025333	.003666	....	....	
84,000	.030833	.005500	....	....	
88,000	.036000	.005167	....	....	
92,000	.043333	.007333	....	....	
96,000	.052333	.009000	....	....	
106,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	106,900
Elastic limit per square inch of original section	do...	73,000
Elongation per inch after rupture	inch..	.2233
Elongation per inch under strain at elastic limit	do...	.002467
Reduction in diameter at point of rupture	do...	.175
Reduction in area after rupture, per cent of original section		57.2
Position of rupture		1″.12 from neck
Character of broken surface		fine silky, serrated
Elongation of inch sections		″.12, ″.19, ″.36*

No. 6705.

Marks, L R B.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".
Specimens Nos. 6705 to 6708, inclusive, from the same lot of steel.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000667	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001333	.000366	....	....	
50,000	.001700	.000367	0.	....	
60,000	.002033	.000333	....	....	
70,000	.002367	.000334	....	....	
74,000	.002567	.000200	....	....	Elastic limit.
75,000	.018000	.015433	....	....	
76,000	.019667	.001667	....	....	
80,000	.023333	.003666	....	....	
84,000	.027667	.004334	....	....	
88,000	.032333	.004666	....	....	
92,000	.038333	.006000	....	....	
96,000	.044833	.006500	....	....	
110,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	110,900
Elastic limit per square inch of original section	do...	74,000
Elongation per inch after rupture	inch..	.2083
Elongation per inch under strain at elastic limit	do...	.002567
Reduction in diameter at point of rupture	do...	.155
Reduction in area after rupture, per cent of original section		51.9
Position of rupture		1".25 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		".25*, ".25*, ".11

No. 6706.

Marks, L R M.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000333	.000233	....	....	
20,000	.000667	.000334	....	....	
30,000	.001000	.000333	....	....	
40,000	.001367	.000367	....	....	
50,000	.001700	.000333	0.	....	
60,000	.002067	.000367	....	....	
70,000	.002400	.000333	....	....	
80,000	.002733	.000333	....	....	
83,000	.002867	.000134	....	....	Elastic limit.
84,000	.023667	.020800	....	....	
88,000	.027333	.003666	....	....	
92,000	.031667	.004334	....	....	
96,000	.037333	.005666	....	....	
100,000	.043667	.006334	....	....	
115,200	....	....	....	....	Tensile strength,

General summary.

Tensile strength per square inch of original section	pounds..	115,200
Elastic limit per square inch of original section	do...	83,000
Elongation per inch after rupture	inch..	.2067
Elongation per inch under strain at elastic limit	do...	.002867
Reduction in diameter at point of rupture	do...	.165
Reduction in area after rupture, per cent of original section		54.6
Position of rupture		1″.6 from neck
Character of rupture		fine silky, cup shaped
Elongation of inch sections		″.14, ″.37*, ″.11

No. 6707.

Marks, L R A B.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000667	.000367	....	....	
30,000	.001000	.000333	....	....	
40,000	.001367	.000367	....	....	
50,000	.001733	.000366	0.	....	
60,000	.002067	.000334	....	....	
65,000	.002267	.000200	....	....	Elastic limit.
66,000	.022333	.020066	....	....	
68,000	.023333	.001000	....	....	
72,000	.027000	.003667	....	....	
76,000	.032333	.005333	....	....	
80,000	.038333	.006000	....	....	
84,000	.046667	.008334	....	....	
99,050	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	99,050
Elastic limit per square inch of original section	do...	65,000
Elongation per inch after rupture	inch..	.2633
Elongation per inch under strain at elastic limit	do...	.002267
Reduction in diameter at point of rupture	do...	.155
Reduction in area after rupture, per cent of original section		51.9
Position of rupture		1″.29 from neck
Character of broken surface		fine silky, serrated
Elongation of inch sections		″.20, ″.30*, ″.29*

No. 6708.

Marks, L R A M.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000333	.000233	....	....	
20,000	.000667	.000334	....	....	
30,000	.001000	.000333	....	....	
40,000	.001367	.000367	....	....	
50,000	.001700	.000333	0.	....	
60,000	.002067	.000367	....	....	
68,000	.002367	.000300	....	....	Elastic limit.
	.025333	.022966	....	....	
70,000	.026000	.000667	....	....	
72,000	.027167	.001167	....	....	
76,000	.032500	.005333	....	....	
80,000	.038167	.005667	....	....	
84,000	.044667	.006500	....	....	
99,750	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	99,750
Elastic limit per square inch of original section ....do...	68,000
Elongation per inch after rupture ....inch..	.2300
Elongation per inch under strain at elastic limit ....do...	.002367
Reduction in diameter at point of rupture....................do...	.155
Reduction in area after rupture, per cent of original section....................	51.9
Position of rupture	1".31 from neck
Character of broken surface	fine silky, cup shaped
Elongation of inch sections	".12, ".26*, ".31*

No. 6846.

Marks, C.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001300	.000333	....	....	
50,000	.001667	.000367	0.	....	
60,000	.002000	.000333	....	....	
70,000	.002333	.000333	....	....	
73,000	.002433	.000100	....	....	Elastic limit.
74,000	.019333	.016900	....	....	
76,000	.021333	.002000	....	....	
80,000	.026333	.005000	....	....	
84,000	.032000	.005667	....	....	
88,000	.039333	.007333	....	....	
92,000	.050000	.010667	....	....	
96,000	.063333	.013333	....	....	
100,000	.096667	.033334	....	....	
100,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	100,900
Elastic limit per square inch of original section	do...	73,000
Elongation per inch after rupture	inch..	.1933
Elongation per inch under strain at elastic limit	do...	.002433
Reduction in diameter at point of rupture	do...	.155
Reduction in area after rupture, per cent of original section		51.9
Position of rupture		″.9 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		″.33*, ″.15, ″.10

SAMPLE $1\frac{3}{16}$″ DIAMETER BY 6″ LONG, OF THE SAME STEEL AS NO. 6846, ANNEALED AT A LOW CHERRY COLOR, AND SPECIMEN THEN TURNED DOWN FROM BAR.

No. 6847.

Marks, C.
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.		
10,000	.000333	.000233			
20,000	.000667	.000334			
30,000	.001000	.000333			
40,000	.001367	.000367			
50,000	.001700	.000333	0.		
57,000	.002000	.000300			Elastic limit.
58,000	.016333	.014333			
59,000	.017267	.000934			
60,000	.017667	.000400			
64,000	.022000	.004333			
68,000	.026333	.004333			
72,000	.032000	.005667			
76,000	.039333	.007333			
80,000	.048333	.009000			
90,720					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	90,720
Elastic limit per square inch of original section	do...	57,000
Elongation per inch after rupture	inch..	.2167
Elongation per inch under strain at elastic limit	do...	.002000
Reduction in diameter at point of rupture	do...	.204
Reduction in area after rupture, per cent of original section		59.3
Position of rupture		1″.7 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		″.16, ″.42*, ″.07

No. 6853.

From rolled barrel.
Marks, C R B. Same steel as 6846.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001300	.000333	....	....	
50,000	.001667	.000367	0.	....	
60,000	.002000	.000333	....	....	
64,000	.002133	.000133	....	....	Elastic limit.
65,000	.019333	.017200	....	....	
66,000	.020000	.000667	....	....	
68,000	.021000	.001000	....	....	
72,000	.025667	.004667	....	....	
76,000	.030000	.004333	....	....	
80,000	.036000	.006000	....	....	
84,000	.043167	.007167	....	....	
88,000	.051333	.008166	....	....	
98,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	98,500
Elastic limit per square inch of original section	do	64,000
Elongation per inch after rupture	inch	.2200
Elongation per inch under strain at elastic limit	do	.002133
Reduction in diameter at point of rupture	do	.155
Reduction in area after rupture, per cent of original section		51.9
Position of rupture		1″.05 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		″.33*, ″.20, ″.13

No. 6854.

From rolled and annealed barrel.
Marks, C R A B. Same steel as 6846.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001300	.000333	....	....	
50,000	.001633	.000333	0.	....	
55,000	.001767	.000134	....	....	Elastic limit.
56,000	.017667	.015900	....	....	
57,000	.018333	.000666	....	....	
58,000	.019000	.000667	....	....	
60,000	.020500	.001500	....	....	
64,000	.025167	.004667	....	....	
68,000	.030333	.005166	....	....	
72,000	.036667	.006334	....	....	
76,000	.044000	.007333	....	....	
80,000	.055333	.011333	....	....	
91,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	91,000
Elastic limit per square inch of original section	do...	55,000
Elongation per inch after rupture	inch..	.2167
Elongation per inch under strain at elastic limit	do...	.001767
Reduction in diameter at point of rupture	do...	.165
Reduction in area after rupture, per cent of original section		54.6
Position of rupture		".65 from neck
Character of broken surface		fine silky, cup shaped
Elongations of inch sections		".12, ".15, ".38*

No. 6872.

Marks, N S.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000133	.000133	0.	....	
10,000	.000300	.000167	....	....	
20,000	.000667	.000367	....	....	
30,000	.001000	.000333	....	....	
40,000	.001333	.000333	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002083	.000366	....	....	
70,000	.002367	.000334	....	....	
80,000	.002700	.000333	....	....	
81,000	.002733	.000033	....	....	Elastic limit.
82,000	.002867	.000134	....	....	
83,000	.003833	.000966	....	....	
84,000	.004667	.000834	....	....	
88,000	.011400	.006733	....	....	
92,000	.018667	.007267	....	....	
96,000	.027667	.009000	....	....	
100,000	.039333	.011666	....	....	
106,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	106,900
Elastic limit per square inch of original section	do...	81,000
Elongation per inch after rupture	inch..	.1600
Elongation per inch under strain at elastic limit	do...	.002733
Reduction in diameter at point of rupture	do...	.185
Reduction in area after rupture, per cent of original section		59.8
Position of rupture		".6 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		".34*, ".08, ".06

No. 6495.

Marks, S B.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Intitial load.
5,000	.000100	.000100	....	....	
10,000	.000333	.000233	....	....	
20,000	.000667	.000334	....	....	
30,000	.001000	.000333	....	....	
40,000	.001367	.000367	....	....	
50,000	.001700	.000333	.000033	.000033	
60,000	.002067	.000367	....	....	
61,000	.002133	.000066	....	....	
62,000	.002200	.000067	....	....	
63,000	.002267	.000067	....	....	
64,000	.002300	.000033	....	....	
65,000	.002333	.000033	....	....	
66,000	.002367	.000034	....	....	Elastic limit.
67,000	.014200	.011833	....	....	
68,000	.015000	.000800	....	....	
69,000	.015400	.000400	....	....	
70,000	.016267	.000867	....	....	
72,000	.017667	.001400	....	....	
74,000	.019833	.002166	....	....	
76,000	.021667	.001834	....	....	
78,000	.024000	.002333	....	....	
80,000	.026100	.002100	....	....	
84,000	.031333	.005233	....	....	
88,000	.035433	.004100	....	....	
92,000	.045000	.009567	....	....	
96,000	.054667	.009667	....	....	
100,000	.070000	.015333	....	....	
104,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	104,900
Elastic limit per square inch of original section	do...	66,000
Elongation per inch after rupture	inch..	.1967
Elongation per inch under strain at elastic limit	do...	.002367
Reduction in diameter at point of rupture	do...	.085
Reduction in area after rupture, per cent of original section		30.7
Position of rupture		1″.3 from neck
Character of broken surface		fine silky
Elongation of inch sections		″.18, ″.26*, ″.15

TABULATION OF TENSION SPECIMENS FROM RIFLE-BARREL STEEL. (LENGTH OF STEMS, 3".)

No. of test.	Marks.	Diameter.	Sectional area.	Elastic limit per square inch.	Tensile strength per square inch.	Elongation in 3 inches.	Contraction of area.	Appearance of fracture.	Elongation of inch sections.	Remarks.
		Inch.	*Sq. inch.*	*Pounds.*	*Pounds.*	*Per cent.*	*Per cent.*		*Inch.*	
6493	S 6	.505	.20	71,000	122,400	16.7	43.3	Fine silky, cup shaped	.11, .27*, .12	
6494	S 6	.505	.20	69,000	118,900	19.0	49.1	.....do	.12, .33*, .12	
6498	S 6	.505	.20	69,000	119,000	19.7	51.9	.....do	.12, .35*, .12	
6499	S 6	.505	.20	65,000	116,100	18.0	51.9	.....do	.09, .13, .32*	From rolled barrel without heating.
6500	S 6	.505	.20	58,000	105,400	17.7	51.9	Fine silky		From balance of rolled barrel, reheated in gas furnace and packed in lime.
6502	S 6	.505	.20	68,000	114,700	19.0	49.1	Fine silky, cup shaped	.10, .27*, .20	Rolled barrel after reheating and annealing.
6508	S 6	.505	.20	69,000	123,950	17.3	46.2	Fine silky	.24*, .18, .10	
6550	S 6	.505	.20	68,000	121,050	17.7	43.3	Fine silky, cup shaped	.11, .31*, .11	
6551	S 6 R	.505	.20	59,000	97,100	27.7	59.8	.....do	.18, .45*, .20	From rolled barrel.
6552	S 7	.505	.20	67,000	120,500	18.3	46.2	Fine silky	.12, .31*, .12	
6553	S 7 R	.505	.20	62,000	102,050	23.3	54.6	Fine silky, cup shaped		From rolled barrel, reheated and annealed in lime.
6575	S 8	.505	.20	70,000	113,500	19.0	46.2	Fine silky	.15, .31*, .11	
6577	S 8 R	.505	.20	68,000	108,000	19.3	54.6	Fine silky, cup shaped	.10, .13, .35*	From rolled barrel.
6578	S 8 R A	.505	.20	80,000	105,500	24.3	62.2	Fine silky, serrated edges	.14, .42*, .17	From rolled barrel, cooled in air, reheated in gas furnace and annealed in lime.
6589	S 9	.505	.20	65,000	117,600	19.0	51.9	Fine silky	.13, .33*, .11	
6608	S 9	.505	.20	69,000	116,000	19.0	51.9	Fine silky, cup shaped	.12, .33*, .12	
6611	S-10	.505	.20	73,000	119,200	18.3	51.9	.....do	.18, .27*, .10	
6616	S 9-R	.505	.20	68,000	102,050	21.7	57.2	.....do	.17, .36*, .12	
6617	S 9-R A	.505	.20	69,000	97,550	24.7	62.2	.....do	.15, .44*, .15	
6618	S-10-R	.505	.20	71,000	111,950	21.3	57.2	.....do	.12, .37*, .15	
6619	S-10 R A	.505	.20	72,000	112,550	21.3	57.2	Fine silky	.12, .18, .34*	
6620	S-10-1	.505	.20	70,000	115,100	19.3	49.1	Fine silky, cup shaped	.12, .34*, .12	
6621	S-10-2	.505	.20	70,000	123,050	17.3	49.1	.....do	.11, .30*, .11	
6622	S-11	.505	.20	70,000	114,100	19.7	51.9	.....do	.20. .28*, .11	
6631	S-12	.505	.20	69,000	109,600	21.3	54.6	.....do	.13, .37*, .14	
6641	S-13	.505	.20	69,000	113,050	20.0	49.1	Fine silky	.13, .34*, .13	
6719	S-14	.505	.20	71,000	108,000	21.7	54.6	Fine silky, cup shaped	.12, .35*, .18	
6736	S-14	.505	.20	72,000	108,500	23.3	57.2	.....do	.19, .38*, .13	
6757	S-15	.505	.20	71,000	113,850	22.0	54.6	.....do	.20, .34*, .12	
6786	S-15 R B	.505	.20	70,000	115,300	18.7	54.6	.....do	.08, .15. .33*	Rolled barrel, butt.
6787	S-15 R M	.505	.20	74,000	118,000	19.7	57.2	.....do	.10, .34*, .15	Rolled barrel, muzzle.
6788	S-15 R A B	.505	.20	65,000	95,500	21.3	54.6	Fine silky, serrated	.34*, .19, .11	Butt, } Rolled barrel, annealed.
6789	S-15 R A M	.505	.20	66,000	93,600	24.3	57.2	Silky, serrated	.14, .38*, .21	Muzzle, } Rolled barrel, annealed.
6791	S-15 O T	Hollow.	.25	54,000	96,320	27.0		Silky, cup shaped		Finished barrel, oil tempered.

TABULATION OF TENSION SPECIMENS FROM RIFLE-BARREL STEEL. (LENGTH OF STEMS, 3″.)—Continued.

No. of test.	Marks.	Diameter.	Sectional area.	Elastic limit per square inch.	Tensile strength per square inch.	Elongation in 3 inches.	Contraction of area.	Appearance of fracture.	Elongation of inch sections.	Remarks.
		Inch.	*Sq. inch.*	*Pounds.*	*Pounds.*	*Per cent.*	*Per cent.*		*Inch.*	
6808	S 16	.505	.20	78,000	123,900	16.3	40.3	Silky cup shaped	.10. .20, .19	
6809	S-16 R B.	.505	.20	80,000	120,400	19.3	51.9	Fine silky, cup shaped	.11, .34*, .13	Butt, } Rolled barrel.
6810	S-16 R M	.505	.20	81,000	123,100	18.0	51.9	do	.14, .32*, .08	Muzzle,
6811	S-16 R A B	.505	.20	60,000	92,550	22.8	43.3	Fine silky, trace of granulation	.29, .23*, .15	Butt, } Rolled barrel, annealed.
6812	S-16 R A M	.505	.20	60,000	91,500	24.3	59.8	Fine silky, serrated edges	.22. .38*, .13	Muzzle,
6814	S-16 O T	Hollow.	.25	58,000	105,840	15.0	....	Fine granular	....	
6835	S-17	.505	.20	70,000	115,300	20.0	46.2	Fine silky, cup shaped	.13, .33*, .14	
6895	S-17 R.	.505	.20	79,000	112,050	22.3	57.2	do	.14, .39*, .14	Rolled barrel.
6896	S-17 R A	.505	.20	76,000	109,500	21.0	57.2	Fine silky, serrated	.10, .17, .36*	Rolled barrel, annealed.
6917	S 17 O T.	Hollow.	.25	64,000	107,800	27.0	....	Silky, cup shaped	....	Finished barrel, oil tempered.
6851	S-18	.505	.20	77,000	118,100	19.0	51.9	Fine silky, cup shaped	.10, .27*, .20	
6852	S-19	.505	.20	73,000	116,000	19.7	54.6	do	.11, .29*, .19	
6871	S-20	.505	.20	76,000	115,500	20.3	51.9	do	.12, .37*, .12	
7205	S 26	.505	.20	68,000	118,400	18.3	49.1	do	.10, .33*, .12	
7206	S 26	.505	.20	69,000	122,700	17.7	46.2	do	.11, .31*, .12	
7207	S 26	.505	.20	67,000	120,500	17.7	49.1	do	.10, .32*, .11	
6466	S G C	.505	.20	64,000	104,900	18.3	49.1	Silky	.34*, .13, .08	Breech of barrel annealed at low heat in charcoal. } Green end bars.
6467	S G L	.505	.20	69,000	105,400	20.7	49.1	do	.34*, .17, .11	Breech of barrel annealed at low heat in lime.
6468	S R C	.505	.20	63,000	111,850	20.0	51.9	do	.13, .35*, .12	Breech of barrel annealed at low heat in charcoal. } Red end bars.
6469	S R L	.505	.20	56,000	102,450	21.0	54.6	Fine silky	.10, .19, .34*	Breech of barrel annealed at low heat in lime.
6470	S 4	.505	.20	66,000	108,800	20.3	54.6	do	.37*, .14, .10	Breech of barrel too hard to drill, annealed at low heat in charcoal. } From same lot of open-hearth steel.
6471	S 5	.505	.20	49,000	109,450	17.3	30.7	Fine granular 50 per cent, silky 50 per cent.	.14, .26*, .12	Breech of barrel too hard to drill, annealed at low heat in lime.
6472	S 2	.505	.20	56,000	125,450	12.3	23.9	Fine granular, dull center	.19*, .10, .08	Breech of barrel heated to about 1,350° F. and annealed in charcoal.
6503	2	.505	.20	68,000	121,400	18.7	51.9	Fine silky	.11, .34*, .11	From bars as received from steel makers.
6504	3	.505	.20	72,000	122,850	18.7	51.9	do	.11, .33*, .12	
6505	4	.505	.20	67,000	119,600	18.3	46.2	do	.12, .31*, .12	
6506	5	.505	.20	67,000	124,550	17.3	46.2	do	.10, .32*, .10	
6507	6	.505	.20	67,000	118,550	18.7	51.9	do	.10, .28*, .18	

6519	2 R	.505	.20	64,000	104,550	18.8	57.2	Fine silky, serrated edges, cup shaped	.37*, .10, .08	Rolled barrel, blue ends.	
6520	3 R	.505	.20	66,000	111,400	17.7	54.6	Fine silky, cup shaped	.08, .11, .34*	Rolled barrel, yellow ends.	
6521	4 R	.505	.20	63,000	107,550	21.7	54.6	do	.12, .21, .32*	Rolled barrel, white ends.	
6522	5 R	.505	.20	67,000	112,000	20.0	54.6	Fine silky, serrated, cup shaped	.37*, .18. .10	Rolled barrel, orange ends.	
6523	6 R	.505	.20	66,000	104,900	20.7	57.2	Fine silky, cup shaped	.39*, .12, .10	Rolled barrel, black ends.	
6720	S J B	.505	.20	77,000	100,900	19.8	62.2	do	.39, .11, .08	From blank.	From same lot of blanks.
6754	S J B O T	Hollow.	.25	110,000	135,920	9.0		Silky, cup shaped		Barrel oil tempered at butt.	
6755	S J B O T	Hollow.	.25	79,000	104,960	2.6		do		do	
6735	S & J	.505	.20	66,000	109,000	19.3	51.9	Fine silky, cup shaped	.11, .13, .34*	From blank received from the steel makers.	
9678	S (1)	Hollow.	.25	Not well defined.	117,280	8.0		Granular, brittle		Specimen over powder chamber.	From barrel oil tempered at low heat along length of powder chamber.
6609	S (1)	Hollow.	.10	48,000	118,200	11.7		Granular	.17*, .09, .09	From middle of length of barrel, untreated part.	
9679	S (2)	Hollow.	.25	Not well defined.	110,000	10.0		Granular, brittle		Specimen over powder chamber.	Do.
6610	S (2)	Hollow.	.10	48,000	107,000	18.3		Fine granular		From middle of length of barrel, untreated part.	
9680	S • • •	Hollow.	.25	66,480	115,320	17.0		Silky, cup shaped		Specimen over powder chamber.	From same finished barrel.
6579	S • • •	Hollow.	.10	68,000	114,400	16.7		do		From middle of length of barrel.	
6579a	S • • •	Hollow.	.10	67,000	113,800	10.0		do		From muzzle end of barrel.	
9681	S • • •	Hollow.	.25	66,720	117,280	15.0		Silky, cup shaped, 50 per cent; fine granular, 50 per cent.		Specimen over powder chamber.	From same finished barrel.
6580	S • • •	Hollow.	.10	66,000	111,800	17.3		Silky, cup shaped	.12, .28*, .12	From middle of length of barrel.	
6581	S • • •	Hollow.	.10	64,000	112,000	12.7		do	.08, .11, .24*	From muzzle end of barrel.	
6607	H	.505	.20	70,000	130,100	16.0	43.3	Fine silky, cup shaped	.11, .27*, .10		From same lot of steel.
6725	H	Hollow.	.25	60,000	112,880	19.0		Silky, 50 per cent; fine granular, 50 per cent.		From breech of barrel, not oil tempered.	
6727	H O T	Hollow.	.25	66,000	109,680	24.0		Silky, cup shaped		From breech of barrel, oil tempered.	
6728	H O T	Hollow.	.25	61,000	106,000	22.0		do		Do.	
6733	H	.505	.20	67,000	127,000	15.3		Fine silky, cup shaped	.09, .10, .27*		
6836	H_1	.505	.20	70,000	131,100	15.3	43.3	do	.26*, .12, .08		From same lot of steel.
6838	H_1 R B	.505	.20	78,000	129,050	16.7	49.1	Fine silky	.20, .21*, .09	Rolled barrel, at butt	
6839	H_1 R A B	.505	.20	72,000	110,200	19.0	57.2	Fine silky, serrated	.09, .11, .37*	Rolled barrel, at butt, annealed.	
6916	H_1 O T	Hollow,	.25	63,000	112,800	15.0		Silky, cup shaped		Finished barrel, oil tempered, specimen over powder chamber.	

TABULATION OF TENSION SPECIMENS FROM RIFLE-BARREL STEEL. (LENGTH OF STEMS, 3″.)—Continued.

No. of test.	Marks.	Diameter.	Sectional area.	Elastic limit per square inch.	Tensile strength per square inch.	Elongation in 3 inches.	Contraction of area.	Appearance of fracture.	Elongation of inch sections.	Remarks.
		Inch.	*Sq. inch.*	*Pounds.*	*Pounds.*	*Per cent.*	*Per cent.*		*Inch.*	
6623	L	.505	.20	67,000	117,900	17.0	37.1	Fine silky, cup shaped	.20*, .21*, .10	
6734	L	.505	.20	69,000	117,050	18.3	46.2	....do	.12, .33*, .10	From same lot of steel.
6726	L	Hollow.	.25	58,000	103,120	29.0		Fine silky		From breech of barrel, not oil tempered.
6729	L O T	Hollow.	.25	59,000	98,480	34.0		Silky, cup shaped		From breech of barrel, oil tempered.
6730	L O T	Hollow.	.25	58,000	99,200	27.0		....do		Do.
6837	L_1	.505	.20	71,000	118,550	18.0		Silky, cup shaped; trace of granulation.	.14, .29*, .11	From same lot of steel.
6840	L_1 R B	.505	.20	80,000	117,000	20.0	51.9	Fine silky	.11, .34*, .15	Rolled barrel at butt.
6841	L_1 R A B	.505	.20	68,000	109,000	19.7	43.3	Silky, serrated, trace of granulation		Rolled barrel at butt, annealed.
6898	L_1 O T	Hollow.	.25	69,000	111,040	20.0		Silky, cup shaped		Finished barrel, oil tempered; specimen over powder chamber.
6958	L 2	.505	.20	73,000	121,850	15.7	34.0	Silky, interspersed with fine granulation	.10, .26*, .11	
6697	V H R M	.505	.20	83,000	126,000	17.0	51.9	Fine silky, cup shaped	.28*, .15, .08	
6698	V H R B	.505	.20	74,000	122,100	18.3	49.1	....do	.14, .31*, .10	
6699	V H R A M	.505	.20	76,000	104,050	23.0	57.2	....do	.12, .31*, .26*	
6700	V H R A B	.505	.20	71,000	110,500	22.0	57.2	....do	.13, .19, .34*	
6701	V H R M_1	.505	.20	87,000	125,150	17.7	51.9	....do	.15, .30*, .08	
6702	V H R B_1	.505	.20	74,000	121,550	19.0	51.9	....do	.15, .32*, .10	
6703	V H R A M_1	.505	.20	76,000	101,450	23.3	59.8	....do	.14, .28*, .28*	
6704	V H R A B_1	.505	.20	73,000	106,900	22.3	57.2	Fine silky, serrated	.12, .19, .36	
6705	L R B	.505	.20	74,000	110,900	20.3	51.9	Fine silky, cup shaped	.25*, .25*, .11	From same lot of steel.
6706	L R M	.505	.20	83,000	115,200	20.7	54.6	....do	.14, .37*, .11	
6707	L R A B	.505	.20	65,000	99,050	26.3	51.9	Fine silky, serrated	.20, .30*, .29	
6708	L R A M	.505	.20	68,000	99,750	23.0	51.9	Fine silky, cup shaped	.12, .26*, .31*	
6846	C	.505	.20	73,000	100,900	19.3	51.9	....do	.33*, .15, .10	From same lot of steel.
6847	C	.564	.25	57,000	90,720	21.7	59.3	....do	.16, .42*, .07	Annealed at low cherry, then turned down from bar.
6853	C R B	.505	.20	64,000	98,500	22.0	51.9	....do	.33*, .20, .13	Rolled barrel.
6854	C R A B	.505	.20	55,000	91,000	21.7	54.6	....do	.12, .15, .38*	Rolled barrel, annealed.
6872	N S	.505	.20	81,000	106,900	16.0	59.8	....do	.34*, .08, .06	
6495	S B	.505	.20	66,000	104,900	19.7	30.7	Fine silky	.18, .26*, .15	

RIFLE BARRELS DIFFICULT TO DRILL.

Ten .30-caliber rifle barrels that gave difficulty in drilling at the Springfield Armory were examined for physical properties in the state they were found after the work of drilling was suspended, and also after treatment of the metal at Watertown Arsenal by annealing, oil quenching and annealing, and by swaging and annealing.

Specimens were first taken from each barrel in the vicinity of or over the place at which drilling of the bores was suspended, and samples were also taken from other parts of some of the barrels, as the details of the tests describe.

The primary object of the tests was to ascertain what physical properties were present which might account for the difficulties encountered in attempting to drill these several barrels.

Specimens were therefore taken at those places where the operation of drilling was suspended, the middle of the length of the specimen being located where the drilling of the barrel at Springfield Armory stopped.

In order to secure a uniform cross-sectional area the drilling was resumed at Watertown Arsenal and carried through the remaining part of each specimen, thus making hollow or annular specimens when finished for testing.

The specimens were generally granular in the fractures, the elastic limits somewhat vague in a number of instances.

The tests were extended to include certain treatment of the metal given at Watertown Arsenal.

A number of pieces were annealed by heating to different temperatures and cooling in lime or charcoal.

Additional bars were heated a low red and swaged to ¾″ diameter, a reduction of ⅛″.

The bars were subsequently annealed in charcoal and then turned down for tensile tests, after which the elastic limits were more sharply defined, and silky fractures generally prevailed.

Tests were also made, after oil quenching and annealing, as a means of imparting different combinations of tensile properties to the metal.

No. 6554.

Breech specimen.
Marks, (1) S.
Exterior diameter, ″.588.
Interior diameter, ″.300.
Sectional area, .20 square inch.
Gauged length, 3″.
Drilling of barrel suspended at location of this specimen.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.001000	.000367	....	....	
40,000	.001333	.000333	....	....	
45,000	.001533	.000200	....	....	
46,000	.001567	.000034	....	....	
47,000	.001633	.000066	....	....	Elastic limit.
48,000	.002267	.000634	....	....	
49,000	.002600	.000333	....	....	
50,000	.002933	.000333	....	....	
51,000	.003300	.000367	....	....	
52,000	.003933	.000633	....	....	
53,000	.005667	.001734	....	....	
54,000	.007667	.002000	....	....	
56,000	.009167	.001500	....	....	
58,000	.009467	.000300	....	....	
60,000	.010667	.001200	....	....	
64,000	.013000	.002333	....	....	
68,000	.016067	.003067	....	....	
72,000	.018000	.001933	....	....	
76,000	.021000	.003000	....	....	
80,000	.024333	.003333	....	....	
84,000	.027767	.003434	....	....	
88,000	.031833	.004066	....	....	
92,000	.037000	.005167	....	....	
96,000	.041667	.004667	....	....	
100,000	.049667	.008000	....	....	
104,000	.060000	.010333	....	....	
112,050	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	112,050
Elastic limit per square inch of original section ....do...	47,000
Elongation per inch after rupture ....inch..	.1200
Elongation per inch under strain at elastic limit ....do...	.001633
Reduction in diameter at point of rupture (exterior)....................do...	.048
Position of rupture	″.7 from neck
Character of broken surface....................	fine granular
Elongation of inch sections....................	″.14*, ″.13, ″.09

No. 6555.

Muzzle specimen.
Marks, (1) S.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.		
10,000	.000333	.000233			
20,000	.000667	.000334			
30,000	.001000	.000333			
40,000	.001333	.000333	0.		
50,000	.001700	.000367			
60,000	.002067	.000367			
61,000	.002100	.000033			
62,000	.002133	.000033			Elastic limit.
63,000	.002267	.000134			
	.004333	.002066			
64,000	.005667	.001334			
66,000	.009333	.003666			
68,000	.010933	.001600			
72,000	.012167	.001234			
76,000	.015000	.002833			
80,000	.017000	.002000			
84,000	.019500	.002500			
88,000	.022667	.003167			
92,000	.025333	.002666			
96,000	.029000	.003667			
100,000	.033000	.004000			
104,000	.037500	.004500			
108,000	.043333	.005833			
112,000	.051667	.008334			
121,400					Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	121,400
Elastic limit per square inch of original section ....do...	62,000
Elongation per inch after rupture....inch..	.1800
Elongation per inch under strain at elastic limit ....do...	.002133
Reduction in diameter at point of rupture....do...	.135
Reduction in area after rupture, per cent of original section....	46.2
Position of rupture	at middle of stem
Character of broken surface....	fine silky
Elongation of inch sections	″.11, ″.31*, ″.12

No. 6556.

Breech specimen.
Marks, (2) S.
Exterior diameter, ″.588.
Interior diameter, ″.300.
Sectional area, .20 square inch.
Gauged length, 3″.
Drilling of barrel suspended at location of this specimen.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.		
10,000	.000300	.000200			
20,000	.000633	.000333			
30,000	.000967	.000334			
40,000	.001300	.000333	0.		
50,000	.001633	.000333			
51,000	.001667	.000034			
52,000	.001700	.000033			
53,000	.001733	.000033			Elastic limit.
54,000	.001967	.000234			
55,000	.002233	.000266			
56,000	.002367	.000134			
57,000	.002633	.000266			
58,000	.002833	.000200			
59,000	.003067	.000234			
60,000	.003333	.000266			
62,000	.004033	.000700			
64,000	.004667	.000634			
68,000	.006333	.001666			
72,000	.008167	.001834			
76,000	.010000	.001833			
80,000	.012000	.002000			
84,000	.014333	.002333			
88,000	.016167	.001834			
92,000	.018667	.002500			
96,000	.021333	.002666			
100,000	.024333	.003000			
104,000	.027500	.003167			
108,000	.030833	*.003333			
128,350					Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	128,350
Elastic limit per square inch of original section ....do...	53,000
Elongation per inch after rupture ....inch..	.0900
Elongation per inch under strain at elastic limit ....do...	.001733
Reduction in diameter at point of rupture (exterior) ....do...	.038
Position of rupture........	″.65 from neck
Character of broken surface........	fine granular
Elongation of inch sections........	″.14*, ″.08, ″.05

No. 6557.

Muzzle specimen.
Marks, (2) S.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001300	.000333	....	....	
50,000	.001667	.000367	....	....	
60,000	.002000	.000333	....	....	
61,000	.002067	.000067	....	....	Elastic limit.
62,000	.002333 .002767	.000266 .000434	....	....	
63,000	.003667	.000900	....	....	
64,000	.004333	.000666	....	....	
66,000	.005167	.000834	....	....	
68,000	.006167	.001000	....	....	
72,000	.008667	.002500	....	....	
76,000	.010000	.001333	....	....	
80,000	.012000	.002000	....	....	
84,000	.014333	.002333	....	....	
88,000	.016667	.002334	....	....	
92,000	.019000	.002333	....	....	
96,000	.021667	.002667	....	....	
100,000	.024667	.003000	....	....	
104,000	.028000	.003333	....	....	
108,000	.031667	.003667	....	....	
112,000	.035667	.004000	....	....	
116,000	.041167	.005500	....	....	
128,600	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	128,600
Elastic limit per square inch of original section....do...	61,000
Elongation per inch after rupture... ....inch..	.1233
Elongation per inch under strain at elastic limit....do...	.002067
Reduction in diameter at point of rupture....do...	.065
Reduction in area after rupture, per cent of original section....	23.9
Position of rupture....	″.8 from neck
Character of broken surface....	granular, radiating from a silky spot at the circumference
Elongation of inch sections....	″.08, ″.10, ″.19*

No. 6558.

Breech specimen.
Marks, (3) S.
Exterior diameter, ″.588.
Interior diameter, ″.300.
Sectional area, .20 square inch.
Gauged length, 3″.
Drilling of barrel suspended at location of this specimen.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001300	.000333	0.	....	
50,000	.001667	.000367	....	....	
54,000	.001800	.000133	....	....	
55,000	.001833	.000033	....	....	Elastic limit.
56,000	.001967	.000134	....	....	
57,000	.002267	.000300	....	....	
58,000	.002600	.000333	....	....	
59,000	.002900	.000300	....	....	
60,000	.003267	.000367	....	....	
62,000	.003833	.000566	....	....	
64,000	.004667	.000834	....	....	
68,000	.006333	.001666	....	....	
72,000	.008000	.001667	....	....	
76,000	.010000	.002000	....	....	
80,000	.012333	.002333	....	....	
84,000	.014500	.002167	....	....	
88,000	.016667	.002167	....	....	
92,000	.019500	.002833	....	....	
96,000	.022000	.002500	....	....	
100,000	.025167	.003167	....	....	
104,000	.029100	.003933	....	....	
108,000	.033000	.003900	....	....	
112,000	.038167	.005167	....	....	
125,600	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section........pounds..	125,600
Elastic limit per square inch of original section........do...	55,000
Elongation per inch after rupture........inch..	.0933
Elongation per inch under strain at elastic limit........do...	.001833
Reduction in diameter at point of rupture (exterior)........do...	.058
Position of rupture........	″.6 from neck
Character of broken surface........	fine, granular
Elongation of inch sections........	″.05, ″.07, ″.16*

No. 6559.

Muzzle specimen.
Marks, (3) S.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000667	.000367	....	....	
30,000	.001000	.000333	....	....	
40,000	.001333	.000333	0.	....	
50,000	.001667	.000334	....	....	
60,000	.002033	.000366	....	....	
61,000	.002067	.000034	....	....	
62,000	.002100	.000033	....	....	
63,000	.002167	.000067	....	....	Elastic limit.
64,000	.002800	.000633	....	....	
65,000	.003667	.000867	....	....	
66,000	.005267	.001600	....	....	
68,000	.006067	.000800	....	....	
70,000	.007067	.001000	....	....	
72,000	.008067	.001000	....	....	
76,000	.010167	.002100	....	....	
80,000	.012667	.002500	....	....	
84,000	.015000	.002333	....	....	
88,000	.017833	.002833	....	....	
92,000	.020000	.002167	....	....	
96,000	.022833	.002833	....	....	
100,000	.025667	.002834	....	....	
104,000	.029333	.003666	....	....	
108,000	.033167	.003834	....	....	
112,000	.034667	.001500	....	....	
116,000	.043333	.008666	....	....	
126,950	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	126,950
Elastic limit per square inch of original section	do...	63,000
Elongation per inch after rupture	inch..	.1667
Elongation per inch under strain at elastic limit	do...	.002167
Reduction in diameter at point of rupture	do...	.085
Reduction in area after rupture, per cent of original section		30.7
Position of rupture		″.7 from neck
Character of broken surface		silky, interspersed with fine granulation
Elongation of inch sections		″.08, ″.10, ″.22*

No. 6560.

Breech specimen.
Marks, (4) S.
Exterior diameter, ″.588.
Interior diameter, ″.300.
Sectional area, .20 square inch.
Gauged length, 3″.
Drilling of barrel suspended at location of this specimen.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001300	.000333	0.	....	
50,000	.001633	.000333	....	....	
52,000	.001733	.000100	....	....	
53,000	.001767	.000034	....	....	
54,000	.001833	.000066	....	....	
55,000	.001867	.000034	....	....	Elastic limit.
56,000	.002100	.000233	....	....	
57,000	.002600	.000500	....	....	
58,000	.003000	.000400	....	....	
59,000	.003667	.000667	....	....	
60,000	.005000	.001333	....	....	
62,000	.005967	.000967	....	....	
64,000	.006767	.000800	....	....	
68,000	.009367	.002600	....	....	
72,000	.010933	.001566	....	....	
76,000	.013667	.002734	....	....	
80,000	.015667	.002000	....	....	
84,000	.018333	.002666	....	....	
88,000	.022000	.003667	....	....	
92,000	.024167	.002167	....	....	
96,000	.027500	.003333	....	....	
100,000	.031667	.004167	....	....	
104,000	.036100	.004433	....	....	
108,000	.041667	.005567	....	....	
121,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	121,100
Elastic limit per square inch of original section	do...	55,000
Elongation per inch after rupture	inch..	.1233
Elongation per inch under strain at elastic limit	do...	.001867
Reduction in diameter at point of rupture (exterior)	do...	.068
Position of rupture		1″.5 from neck
Character of broken surface		fine granular
Elongation of inch sections		″.08, ″.20*, ″.09

No. 6561.

Specimen, 9¼″ from breech.
Marks, (5) S.
Exterior diameter, ″.588.
Interior diameter, ″.300.
Sectional area, .20 square inch.
Gauged length, 3″.
Drilling of barrel suspended at location of this specimen.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000600	.000300	....	....	
30,000	.000933	.000333	....	....	
40,000	.001267	.000334	0.	....	
50,000	.001633	.000366	....	....	
54,000	.001800	.000167	....	....	
55,000	.001867	.000067	....	....	Elastic limit.
56,000	.002500	.000633	....	....	
57,000	.004067	.001567	....	....	
58,000	.004600	.000533	....	....	
59,000	.005000	.000400	....	....	
60,000	.005567	.000567	....	....	
62,000	.006667	.001100	....	....	
64,000	.008000	.001333	....	....	
68,000	.010000	.002000	....	....	
72,000	.012233	.002233	....	....	
76,000	.014667	.002434	....	....	
80,000	.017000	.002333	....	....	
84,000	.020000	.003000	....	....	
88,000	.023000	.003000	....	....	
92,000	.026667	.003667	....	....	
96,000	.030000	.003333	....	....	
100,000	.034500	.004500	....	....	
104,000	.039667	.005167	....	....	
108,000	.047333	.007666	....	....	
118,200	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	118,200
Elastic limit per square inch of original section	do...	55,000
Elongation per inch after rupture	inch..	.1467
Elongation per inch under strain at elastic limit	do...	.001867
Reduction in diameter at point of rupture (exterior)	do...	.108
Position of rupture		1″.1 from neck
Character of broken surface		silky, interspersed with fine granulation
Elongation of inch sections		″.20*, ″.15, ″.09

No. 6562.

Specimen, 12″ from breech.
Marks, (6) S.
Exterior diameter, ″.588.
Interior diameter, ″.300.
Sectional area, .20 square inch.
Gauged length, 3″.
Drilling of barrel suspended at location of this specimen.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.		
10,000	.000300	.000200			
20,000	.000633	.000333			
30,000	.000967	.000334			
40,000	.001300	.000333			
50,000	.001667	.000367	0.		
59,000	.001967	.000300			
60,000	.002000	.000083			Elastic limit.
61,000	.002133	.000133			
62,000	.002300	.000167			
63,000	.002400	.000100			
64,000	.002600	.000200			
66,000	.003333	.000733			
68,000	.004167	.000834			
70,000	.004833	.000666			
72,000	.005600	.000767			
76,000	.007167	.001567			
80,000	.009067	.001900			
84,000	010667	.001600			
88,000	.012667	.002000			
92,000	.014667	.002000			
96,000	.017167	.002500			
100,000	.019667	.002500			
104,000	.022667	.003000			
108,000	.025000	.002333			
112,000	.028333	.003333			
116,000	.031833	.003500			
135,750					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	135,750
Elastic limit per square inch of original section	do...	60,000
Elongation per inch after rupture	inch..	.1133
Elongation per inch under strain at elastic limit	do...	.002000
Reduction in diameter at point of rupture (exterior)	do...	.068
Position of rupture		1″.16 from neck
Character of broken surface		fine granular
Elongation of inch sections		″.07, ″.14*, ″.13*

No. 6563.

Specimen, 13⅝" from breech.
Marks, (7) S.
Exterior diameter, ".588.
Interior diameter, ".300.
Sectional area, .20 square inch.
Gauged length, 3".
Drilling of barrel suspended at location of this specimen.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001333	.000366	....	....	
50,000	.001667	.000334	0.	....	
58,000	.001933	.000266	....	....	
59,000	.002000	.000067	....	....	Elastic limit.
60,000	.002433	.000433	....	....	
61,000	.002633	.000200	....	....	
62,000	.002633	.000200	....	....	
63,000	.003400	.000567	....	....	
64,000	.004333	.000933	....	....	
68,000	.006000	.001667	....	....	
72,000	.007833	.001833	....	....	
76,000	.009767	.001934	....	....	
80,000	.011667	.001900	....	....	
84,000	.014000	.002333	....	....	
88,000	.016167	.002167	....	....	
92,000	.018667	.002500	....	....	
96,000	.021333	.002666	....	....	
100,000	.024500	.003167	....	....	
104,000	.028000	.003500	....	....	
108,000	.031667	.003667	....	....	
112,000	.035667	.004000	....	....	
116,000	.040667	.005000	....	....	
120,000	.048000	.007333	....	....	
128,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	128,900
Elastic limit per square inch of original section	do...	59,000
Elongation per inch after rupture	inch..	.1167
Elongation per inch under strain at elastic limit	do...	.002000
Reduction in diameter at point of rupture (exterior)	do...	.068
Position of rupture		".95 from neck
Character of broken surface		fine granular
Elongation of inch sections		".16*, ".12, ".07

No. 6564.

Breech specimen.
Marks, (8) G.
Exterior diameter, ″.588.
Interior diameter, ″.300.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial loads.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001300	.000333	....	....	
50,000	.001633	.000333	0.	....	
60,000	.002000	.000367	....	....	
61,000	.002033	.000033	....	....	
62,000	.002067	.000034	....	....	Elastic limit.
63,000	.002400	.000333	....	....	
64,000	.002667	.000267	....	....	
65,000	.003000	.000333	....	....	
66,000	.004000	.001000	....	....	
68,000	.006667	.002667	....	....	
72,000	.008700	.002033	....	....	
76,000	.010667	.001967	....	....	
80,000	.012833	.002166	....	....	
84,000	.015167	.002334	....	....	
88,000	.017333	.002166	....	....	
92,000	.020000	.002667	....	....	
96,000	.023000	.003000	....	....	
100,000	.025667	.002667	....	....	
104,000	.029000	.003333	....	....	
108,500	.033000	.004000	....	....	
112,000	.037500	.004500	....	....	
116,000	.043333	.005833	....	....	
129,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	**pounds..**	**129,000**
Elastic limit per square inch of original section	**do...**	**62,000**
Elongation per inch after rupture	**inch..**	**.1500**
Elongation per inch under strain at elastic limit	**do...**	**.002067**
Reduction in diameter at point of rupture (exterior)	**do...**	**.098**
Position of rupture		**1″.5 from neck**
Character of broken surface		**silky, interspersed with fine granulation**
Elongation of inch sections		**″.13, ″.24*, ″.08**

No. 6565.

Specimen 17″.2 from breech.
Marks, (8) G.
Exterior diameter, ″.580.
Interior diameter, ″.300.
Sectional area, .1936 square inch.
Gauged length, 3″.
Drilling of barrel suspended at location of this specimen.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001300	.000333	0.	....	
50,000	.001633	.000333	....	....	
60,000	.002000	.000367	....	....	
65,000	.002200	.000200	....	....	Elastic limit.
66,000	.002333	.000133	....	....	
67,000	.002633	.000300	....	....	
68,000	003500	.000833	....	....	
70,000	.005000	.001500	....	....	
72,000	.005700	.000700	....	....	
74,000	.006767	.001067	....	....	
76,000	.007657	.000900	....	....	
80,000	.009667	.001000	....	....	
84,000	.011667	.002000	....	....	
88,000	.014000	.002333	....	....	
92,000	.016000	.002000	....	....	
96,000	.018500	.002500	....	....	
100,000	.021167	.002667	....	....	
104,000	.024167	.003000	....	....	
108,000	.027833	.003166	....	....	
112,000	.031000	.003667	....	....	
129,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	129,100
Elastic limit per square inch of original section ....do...	65,000
Elongation per inch after rupture ....inch..	.1267
Elongation per inch under strain at elastic limit ....do...	.002200
Reduction in diameter at point of rupture (exterior) ....do...	.080
Position of rupture	1″.04 from neck
Character of broken surface	silky and fine granular metal interspersed
Elongation of inch sections	″.19*, ″.13, ″.06

No. 6566.

Breech specimen.
Marks, (9) S.
Exterior diameter, ″.588.
Interior diameter, ″.300.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001333	.000366	....	....	
48,000	.001633	.000300	....	....	Elastic limit.
49,000	.002000	.000367	....	....	
50,000	.004433	.000433	....	....	
51,000	.005000	.000567	....	....	
52,000	.005500	.000500	....	....	
54,000	.006400	.000900	....	....	
56,000	.007667	.001267	....	....	
60,000	.009500	.001833	....	....	
64,000	.011667	.002167	....	....	
68,000	.014000	.002333	....	....	
72,000	.016667	.002667	....	....	
76,000	.018933	.002266	....	....	
80,000	.022000	.003067	....	....	
84,000	.025333	.003333	....	....	
88,000	.029167	.003834	....	....	
92,000	.033333	.004166	....	....	
96,000	.038333	.005000	....	....	
100,000	.044667	.006334	....	....	
112,600	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	112,600
Elastic limit per square inch of original section	do...	48,000
Elongation per inch after rupture	inch..	.1400
Elongation per inch under strain at elastic limit	do...	.001633
Reduction in diameter at point of rupture (exterior)	do...	.078
Position of rupture		1″.5 from neck
Character of broken surface		fine granular
Elongation of inch sections		″.09, ″.21*, ″.12

No. 6567.

Specimen, 23¾″ from breech.
Marks, (9) S.
Exterior diameter, ″.588.
Interior diameter, ″.300.
Sectional area, .20 square inch.
Gauged length, 3″.
Drilling of barrel suspended at location of this specimen.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.001000	.000067	....	....	
40,000	.001333	.000333	0.	....	
49,000	.001667	.000334	....	....	
50,000	.001733	.000066	....	....	
51,000	.001800	.000067	....	....	Elastic limit.
52,000	.002000	.000200	....	....	
53,000	.002133	.000133	....	....	
54,000	.002300	.000167	....	....	
55,000	.002433	.000133	....	....	
56,000	.002633	.000200	....	....	
57,000	.002767	.000134	....	....	
58,000	.002000	.000233	....	....	
60,000	.004333	.001333	....	....	
62,000	.005833	.001500	....	....	
64,000	.006667	.000834	....	....	
68,000	.008667	.002000	....	....	
72,000	.010667	.002000	....	....	
76,000	.013000	.002333	....	....	
80,000	.014833	.001833	....	....	
84,000	.017333	.002500	....	....	
88,000	.019833	.002500	....	....	
92,000	.022500	.002667	....	....	
96,000	.025667	.003167	....	....	
100,000	.029333	.003666	....	....	
104,000	.033000	.003667	....	....	
108,000	.038833	.005833	....	....	
122,600	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	122,600
Elastic limit per square inch of original section	do...	51,000
Elongation per inch after rupture	inch..	.1100
Elongation per inch under strain at elastic limit	do...	.001800
Reduction in diameter at point of rupture (exterior)	do...	.068
Position of rupture		″.7 from neck
Character of broken surface		fine granular
Elongation of inch sections		″.18*, ″.09, ″.06

No. 6568.

Breech specimen.
Marks, (10) S.
Exterior diameter, ".588.
Interior diameter, ".300.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.		
10,000	.000300	.000200			
20,000	.000633	.000333			
30,000	.000967	.000334			
40,000	.001300	.000333	0.		
50,000	.001667	.000367			Elastic limit.
51,000	.001767	.000100			
52,000	.002400	.000633			
53,000	.002833	.000433			
54,000	.003400	.000567			
55,000	.003733	.000333			
56,000	.004100	.000367			
58,000	.005000	.000900			
60,000	.005833	.000833			
64,000	.007667	.000834			
68,000	.009667	.002000			
72,000	.011667	.002000			
76,000	.014000	.002333			
80,000	.016667	.002667			
84,000	.018333	.001666			
88,000	.021667	.003334			
92,000	.024667	.003000			
96,000	.027833	.003166			
100,000	.031333	.003500			
104,000	.036000	.004667			
108,000	.040667	.004667			
112,000	.046667	.006000			
121,500					Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	121,500
Elastic limit per square inch of original section ....do...	50,000
Elongation per inch after rupture ....inch..	.1200
Elongation per inch under strain at elastic limit ....do...	.001667
Reduction in diameter at point of rupture ....do...	.068
Position of rupture	at middle of stem
Character of broken surface	fine granular
Elongation of inch sections	".10, ".17*, ".09

No. 6569.

Specimen, 27″ from breech.
Marks, (10) S.
Exterior diameter, ″.588.
Interior diameter, ″.300.
Sectional area, .20 square inch.
Gauged length, 3″.
Drilling of barrel suspended at location of this specimen.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001300	.000333	0.	....	
50,000	.001667	.000367	....	....	
55,000	.001800	.000133	....	....	
56,000	.001867	.000067	....	....	
57,000	.001933	.000066	....	....	
58,000	.001967	.000034	....	....	Elastic limit.
59,000	.002200	.000233	....	....	
60,000	.002567	.000367	....	....	
61,000	.003167	.000600	....	....	
62,000	.004067	.000900	....	....	
64,000	.004800	.000733	....	....	
68,000	.006600	.001800	....	....	
72,000	.008333	.001733	....	....	
76,000	.010233	.001900	....	....	
80,000	.012333	.002100	....	....	
84,000	.014333	.002000	....	....	
88,000	.016667	.002334	....	....	
92,000	.019167	.002500	....	....	
96,000	.021767	.002600	....	....	
100,000	.024667	.002900	....	....	
104,000	.028000	.003333	....	....	
108,000	.032000	.004000	....	....	
112,000	.036333	.004333	....	....	
128,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	128,900
Elastic limit per square inch of original section	do...	58,000
Elongation per inch after rupture	inch..	.1467
Elongation per inch under strain at elastic limit	do...	.001967
Reduction in diameter at point of rupture (exterior)	do...	.078
Position of rupture		″.7 from neck
Character of broken surface		fine granular
Elongation of inch sections		″.06, ″.09, ″.19*

No. 6583.

Breech specimen, annealed at low heat in lime.
Marks, (5) S.
Exterior diameter, ".588.
Interior diameter, ".300.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001300	.000333	0.	....	
50,000	.001667	.000367	....	....	
55,000	.001867	.000200	....	....	Elastic limit.
	.003067	.001200	....	....	
56,000	.004000	.000933	....	....	
57,000	.005500	.001500	....	....	
58,000	.007167	.001667	....	....	
60,000	.008000	.000833	....	....	
64,000	.010833	.002833	....	....	
68,000	.012833	.002500	....	....	
72,000	.015833	.002500	....	....	
76,000	.017667	.002334	....	....	
80,000	.020833	.003166	....	....	
84,000	.024333	.003500	....	....	
88,000	.028000	.003667	....	....	
92,000	.032333	.004333	....	....	
96,000	.037333	.005000	....	....	
100,000	.043667	.006334	....	....	
104,000	.051667	.008000	....	....	
113,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section..........pounds..	113,000
Elastic limit per square inch of original section..........do...	55,000
Elongation per inch after rupture..........inch..	.1567
Elongation per inch under strain at elastic limit..........do...	.001867
Reduction in diameter at point of rupture (exterior)..........do...	.108
Position of rupture..........	1".18 from neck
Character of broken surface..........	silky, interspersed with fine granulation
Elongation of inch sections..........	".08, ".21*, ".18*

No. 6584.

Breech specimen, annealed at heat above specimen (5) S, in lime.
Marks, (6) S.
Exterior diameter, ".588.
Interior diameter, ".300.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001300	.000333	0.	....	
50,000	.001667	.000367	....	....	
60,000	.002000	.000333	....	....	
63,000	.002100	.000100	....	....	Elastic limit.
64,000	.002667	.000567	....	....	
65,000	.005333	.002666	....	....	
66,000	.005667	.000334	....	....	
68,000	.006333	.000666	....	....	
72,000	.008333	.002000	....	....	
76,000	.010333	.002000	....	....	
80,000	.012333	.002000	....	....	
84,000	.014333	.002000	....	....	
88,000	.016667	.002334	....	....	
92,000	.019000	.002333	....	....	
96,000	.021667	.002667	....	....	
100,000	.024667	.003000	....	....	
104,000	.027333	.002666	....	....	
108,000	.030833	.003500	....	....	
131,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	131,900
Elastic limit per square inch of original section	do...	63,000
Elongation per inch after rupture	inch..	.1433
Elongation per inch under strain at elastic limit	do...	.002100
Reduction in diameter at point of rupture (exterior)	do...	.108
Position of rupture		".8 from neck
Character of broken surface		fine granular
Elongation of inch sections		".10, ".11, ".22*

No. 6585.

Breech specimen, annealed at heat above specimen (6) S, in lime.
Marks, (7) S.
Exterior diameter, ″.588.
Interior diameter, ″.300.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.001000	.000367	....	....	
40,000	.001333	.000333	....	....	
50,000	.001667	.000334	....	....	
60,000	.002000	.000333	....	....	Elastic limit.
61,000	.003000	.001000	....	....	
62,000	.003667	.000667	....	....	
63,000	.004333	.000666	....	....	
64,000	.005500	.001167	....	....	
68,000	.007333	.001833	....	....	
72,000	.009333	.002000	....	....	
76,000	.011667	.002334	....	....	
80,000	.013667	.002000	....	....	
84,000	.016000	.002334	....	....	
88,000	.018333	.002333	....	....	
92,000	.020733	.002400	....	....	
96,000	.023833	.003100	....	....	
100,000	.026833	.003000	....	....	
104,000	.030400	.003567	....	....	
108,000	.034667	.004267	....	....	
112,000	.039333	.004666	....	....	
126,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	126,100
Elastic limit per square inch of original section ....do...	60,000
Elongation per inch after rupture ....inch..	.1233
Elongation per inch under strain at elastic limit ....do...	.002000
Reduction in diameter at point of rupture (exterior) ....do...	.108
Position of rupture	″.5 from neck
Character of broken surface	silky, interspersed with fine granulation
Elongation of inch sections	″.06, ″.07, ″.24*

No. 6586.

Specimen near muzzle end, annealed in lime.
Marks, (1) S.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001300	.000333	....	....	
50,000	.001633	.000333	0.	....	
60,000	.001967	.000334	....	....	
61,000	.002000	.000338	....	....	Elastic limit.
62,000	.004167	.002167	....	....	
63,000	.004933	.000766	....	....	
64,000	.006000	.001067	....	....	
66,000	.007233	.001233	....	....	
68,000	.007833	.000600	....	....	
72,000	.010167	.002334	....	....	
76,000	.012667	.002500	....	....	
80,000	.014667	.002000	....	....	
84,000	.017167	.002500	....	....	
88,000	.019667	.002500	....	....	
92,000	.022333	.002666	....	....	
96,000	.025833	.003500	....	....	
100,000	.029000	.003167	....	....	
104,000	.033000	.004000	....	....	
108,000	.037667	.004667	....	....	
112,000	.043333	.005666	....	....	
125,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section..........pounds..	125,100
Elastic limit per square inch of original section..........do...	61,000
Elongation per inch after rupture..........inch..	.1433
Elongation per inch under strain at elastic limit..........do...	.002000
Reduction in diameter at point of rupture..........do...	.115
Reduction in area after rupture, per cent of original section..........	40.8
Position of rupture..........	″.65 from neck
Character of broken surface..........	fine silky, trace of granulation
Elongation of inch sections..........	″.06, ″.09, ″.28*

No. 6587.

Specimen near muzzle end, annealed in lime.
Marks, (2) S.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.		
10,000	.000300	.000233			
20,000	.000633	.000333			
30,000	.000967	.000334			
40,000	.001333	.000366			
50,000	.001667	.000334	0.		
60,000	.002000	.000333			
61,000	.002033	.000033			
62,000	.002067	.000034			
63,000	.002100	.000033			
64,000	.002133	.000033			Elastic limit.
65,000	.002667	.000534			
66,000	.004000	.001333			
67,000	.004700	.000700			
68,000	.005333	.000633			
72,000	.007333	.002000			
76,000	.009000	.001667			
80,000	.011000	.002000			
84,000	.013000	.002000			
88,000	.015167	.002167			
92,000	.017333	.002166			
96,000	.020000	.002667			
100,000	.022167	.002167			
104,000	.025333	.002166			
108,000	.028667	.003334			
112,000	.032000	.003333			
132,550					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	132,550
Elastic limit per square inch of original section	do...	64,000
Elongation per inch after rupture	inch..	.1400
Elongation per inch under strain at elastic limit	do..	.002133
Reduction in diameter at point of rupture	do...	.095
Reduction in area after rupture, per cent of original section		34.0
Position of rupture		".9 from neck
Character of broken surface		silky, interspersed with fine granulation
Elongation of inch sections		".23*, ".10, ".09

No. 6588.

Specimen near muzzle end, annealed in lime.
Marks, (3) S.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001333	.000366	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002033	.000366	....	....	
64,000	.002233	.000200	....	....	
65,000	.002300	.000067	....	....	
66,000	.002333	.000033	....	....	Elastic limit.
67,000	.006667	.004334	....	....	
68,000	.007333	.000666	....	....	
70,000	.008000	.000667	....	....	
72,000	.009000	.001000	....	....	
76,000	.011500	.002500	....	....	
80,000	.013333	.001833	....	....	
84,000	.016000	.002667	....	....	
88,000	.018333	.002333	....	....	
92,000	.021000	.002667	....	....	
96,000	.023833	.002833	....	....	
100,000	.027000	.003167	....	....	
104,000	.030333	.003333	....	....	
108,000	.034667	.004334	....	....	
112,000	.039333	.004666	....	....	
127,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	127,000
Elastic limit per square inch of original section	do...	66,000
Elongation per inch after rupture	inch..	.1500
Elongation per inch under strain at elastic limit	do...	.002333
Reduction in diameter at point of rupture	do...	.125
Reduction in area after rupture, per cent of original section		43.3
Position of rupture		".6 from neck
Character of broken surface		silky, trace of granulation
Elongation of inch sections		".09, ".09, ".27*

No. 6601.

Piece of barrel heated low red and swaged down to ¾-inch diameter. Reheated and annealed in charcoal.

Marks, (1) S.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000667	.000367	....	....	
30,000	.001000	.000333	....	....	
40,000	.001367	.000367	....	....	
50,000	.001700	.000333	....	....	
60,000	.002100	.000400	....	....	
65,000	.002300	.000200	0.	....	
68,000	.002433	.000133	....	....	Elastic limit.
69,000	.010000	.007567	....	....	
70,000	.010667	.000667	....	....	
72,000	.011667	.001000	....	....	
74,000	.012333	.000666	....	....	
76,000	.013667	.001334	....	....	
80,000	.016333	.002666	....	....	
84,000	.019167	.002834	....	....	
88,000	.022333	.003166	....	....	
92,000	.025267	.002934	....	....	
96,000	.029000	.003733	....	....	
100,000	.032833	.003833	....	....	
104,000	.037833	.005000	....	....	
108,000	.043667	.005834	....	....	
112,000	.052333	.008666	....	....	
122,050	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	122,050
Elastic limit per square inch of original section	do	68,000
Elongation per inch after rupture	inch	.1733
Elongation per inch under strain at elastic limit	do	.002433
Reduction in diameter at point of rupture	do	.155
Reduction in area after rupture, per cent of original section		51.9
Position of rupture		1".35 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		".10, ".30*, ".12

No. 6602.

Specimen treated the same as No. 6601.
Marks, (2) S.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001333	.000366	....	....	
50,000	.001700	.000367	....	....	
60,000	.002067	.000367	....	....	
68,000	.002300	.000233	....	....	
69,000	{ .002367	.000067	....	....	Elastic limit.
	.012000	.009633	....	....	
70,000	.012200	.000200	....	....	
72,000	.012533	.000333	....	....	
76,000	.014333	.001800	....	....	
80,000	.016667	.002334	....	....	
84,000	.019333	.002666	....	....	
88,000	.022333	.003000	....	....	
92.000	.025333	.003000	....	....	
96,000	.029000	.003667	....	....	
100,000	.033000	.004000	....	....	
104,000	.037667	.004667	....	....	
108,000	.043333	.005666	....	....	
112,000	.051667	.008334	....	....	
121,850	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	121,850
Elastic limit per square inch of original section	do...	69,000
Elongation per inch after rupture	inch..	.1767
Elongation per inch under strain at elastic limit	do...	.002367
Reduction in diameter at point of rupture	do...	.145
Reduction in area after rupture, per cent of original section		49.1
Position of rupture		".95 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		".09, ".13, ".31*

No. 6603.

Specimen treated in same manner as No. 6601.
Marks, (3) S.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000333	.000233	....	....	
20,000	.000667	.000334	....	....	
30,000	.001000	.000333	....	....	
40,000	.001367	.000367	....	....	
50,000	.001733	.000366	....	....	
60,000	.002067	.000334	....	....	
69,000	.002400	.000333	....	....	
70,000	.002433	.000033	....	....	
71,000	.002500	.000067	....	....	
72.000	.002533	.000033	....	....	Elastic limit.
73,000	.011333	.008800	....	....	
74,000	.011933	.000600	....	....	
76,000	.013000	.001067	....	....	
80,000	.016000	.003000	....	....	
84,000	.019000	.003000	....	....	
88,000	.021667	.002667	....	....	
92,000	.025000	.003333	....	....	
96,000	.029000	.004000	....	....	
100,000	.032667	.003667	....	....	
104,000	.038667	.006000	....	....	
108,000	.045333	.006666	....	....	
112,000	.055000	.009667	....	....	
119,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	119,600
Elastic limit per square inch of original section	do...	72,000
Elongation per inch after rupture	inch..	.1767
Elongation per inch under strain at elastic limit	do...	.002533
Reduction in diameter at point of rupture	do...	.155
Reduction in area after rupture, per cent of original section		51.9
Position of rupture		″.85 from neck
Character of broken surface		fine silky, serrated
Elongation of inch sections		″.08, ″.12, ″.33*

No. 6604.

Section of barrel annealed in charcoal.
Marks, (6) S.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000160	0.	....	
10,000	.000333	.000233	....	....	
20,000	.000667	.000334	....	....	
30,000	.001033	.000366	....	....	
40,000	.001400	.000367	....	....	
50,000	.001733	.000333	....	....	
60,000	.002100	.000367	....	....	
63,000	.002267	.000167	....	....	
64,000	.002300 .006333	.000033 .004033	....	....	Elastic limit.
65,000	.009067	.002734	....	....	
66,000	.009500	.000433	....	....	
68,000	.010333	.000833	....	....	
72,000	.013333	.003000	....	....	
76,000	.015000	.001667	....	....	
80,000	.017000	.002000	....	....	
84,000	.020000	.003000	....	....	
88,000	.022333	.002333	....	....	
92,000	.025333	.003000	....	....	
96,000	.028667	.003334	....	....	
100,000	.032333	.003666	....	....	
104,000	.036333	.004000	....	....	
108,000	.041667	.005334	....	....	
112,000	.048667	.007000	....	....	
123,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	123,000
Elastic limit per square inch of original section	do...	64,000
Elongation per inch after rupture	inch..	.1433
Elongation per inch under strain at elastic limit	do...	.002300
Reduction in diameter at point of rupture	do...	.125
Reduction in area after rupture, per cent of original section		43.3
Position of rupture		".5 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		".27*, ".08, ".08

No. 6605.

Treated in same manner as No. 6604, but heated to higher temperature for annealing.

Marks, (6) S.
Diameter, ".500.
Sectional area, .196 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000667	.000367	....	....	
30,000	.001000	.000333	....	....	
40,000	.001367	.000367	....	....	
50,000	.001733	.000366	....	....	
58,000	....	....	....	....	Elastic limit, approximate.
60,000	.005433	.003700	....	....	
61,000	.006333	.000900	....	....	
62,000	.006733	.000400	....	....	
64,000	.007433	.000700	....	....	
68,000	.009833	.002400	....	....	
72,000	.011500	.001667	....	....	
76,000	.013400	.001900	....	....	
80,000	.015767	.002367	....	....	
84,000	.017833	.002066	....	....	
88,000	.021000	.003167	....	....	
92,000	.022667	.001667	....	....	
96,000	.026067	.003400	....	....	
100,000	.029667	.003600	....	....	
104,000	.033667	.004000	....	....	
108,000	.038000	.004333	....	....	
112,000	.043667	.005667	....	....	
127,040	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section........pounds..	127,040
Elastic limit per square inch of original section (approximate)........do...	58,000
Elongation per inch after rupture........inch..	.1600
Reduction in diameter at point of rupture........do...	.080
Reduction in area after rupture, per cent of original section........	29.3
Position of rupture........	1".14 from neck
Character of broken surface........	granular, radiating from a silky spot in the circumference
Elongation of inch sections........	".10, ".21*, ".17*

No. 6606.

Treated the same as No. 6604.
Marks, (8) G.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000333	.000233	....	....	
20,000	.000667	.000334	....	....	
30,000	.001000	.000333	....	....	
40,000	.001333	.000333	....	....	
50,000	.001700	.000367	....	....	
60,000	.002067	.000367	....	....	
70,000	.002433 .012000	.000366 .009567	....	....	Elastic limit.
71,000	.012500	.000500	....	....	
72,000	.012867	.000367	....	....	
76,000	.015000	.002133	....	....	
80,000	.017167	.002167	....	....	
84,000	.020000	.002833	....	....	
88,000	.022667	.002667	....	....	
92,000	.025667	.003000	....	....	
96,000	.029333	.003666	....	....	
100,000	.033667	.004334	....	....	
104,000	.038000	.004333	....	....	
108,000	.044333	.006333	....	....	
112,000	.052000	.007667	....	....	
121,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section .... pounds..	121,500
Elastic limit per square inch of original section .... do...	70,000
Elongation per inch after rupture .... inch..	.1733
Elongation per inch under strain at elastic limit .... do...	.002433
Reduction in diameter at point of rupture .... do...	.145
Reduction in area after rupture, per cent of original section	49.1
Position of rupture	″.85 from neck
Character of broken surface	fine silky, cup shaped
Elongation of inch sections	″.09, ″.13, ″.30*

No. 6624.

Oil tempered and annealed.
Marks, (4) S.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.		
10,000	.000300	.000233			
20,000	.000633	.000333			
30,000	.000967	.000334			
40,000	.001333	.000366			
50,000	.001667	.000334	0.		
60,000	.002000	.000333			
70,000	.002367	.000367			
80,000	.002733	.000366			
81,000	.002800	.000067			Elastic limit.
82,000	.002900	.000100			
83,000	.005667	.002767			
84,000	.006167	.000500			
85,000	.008000	.001833			
86,000	.009500	.001500			
88,000	.023333	.013833			
92,000	.026667	.003334			
96,000	.032667	.006000			
100,000	.038333	.005666			
114,450					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	114,450
Elastic limit per square inch of original section	do	81,000
Elongation per inch after rupture	inch	.1900
Elongation per inch under strain at elastic limit	do	.002800
Reduction in diameter at point of rupture	do	.185
Reduction in area after rupture, per cent of original section		59.8
Position of rupture		".55 from neck
Character of broken surface		fine silky, serrated
Elongation of inch sections		".10, ".11, ".36*

No. 6625.

Oil tempered and annealed.
Marks, (5) S.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001333	.000366	....	....	
50,000	.001700	.000367	....	....	
60,000	.002033	.000333	....	....	
70,000	.002400	.000367	....	....	
80,000	.002733	.000333	....	....	
90,000	.003100	.000367	....	....	
100,000	.003533	.000433	....	....	
105,000	.003667	.000134	....	....	
106,000	.003700	.000033	....	....	
107,000	.003733	.000033	....	....	Elastic limit.
108,000	.003867	.000134	....	....	
109,000	.007667	.003800	....	....	
110,000	.010000	.002333	....	....	
127,600	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	127,600
Elastic limit per square inch of original section	do...	107,000
Elongation per inch after rupture	inch..	.1433
Elongation per inch under strain at elastic limit	do...	.003733
Reduction in diameter at point of rupture	do...	.165
Reduction in area after rupture, per cent of original section		54.6
Position of rupture		".55 from neck
Character of broken surface		fine silky, serrated
Elongation of inch sections		".31*, ".06, ".06

No. 6626.

Oil tempered and annealed.
Marks, (7) S.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000333	.000266	....	....	
20,000	.000667	.000334	....	....	
30,000	.001000	.000333	....	....	
40,000	.001333	.000333	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002033	.000366	....	....	
70,000	.002367	.000334	....	....	
80,000	.002733	.000366	....	....	
90,000	.003067	.000334	....	....	
95,000	.003267	.000200	....	....	
100,000	.003433	.000166	....	....	
105,000	.003600	.000167	....	....	
110,000	.003767	.000167	....	....	
115,000	.003967	.000200	....	....	
118,000	.004100	.000133	....	....	Elastic limit.
119,000	.004300	.000200	....	....	
120,000	.004400	.000100	.000100	.000100	
121,000	.004700	.000300	....	....	
122,000	.005367	.000667	....	....	
123,000	.006333	.000966	....	....	
124,000	.007500	.001167	....	....	
125,000	.009667	.002167	....	....	
143,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	143,500
Elastic limit per square inch of original section	do...	118,000
Elongation per inch after rupture	inch..	.1200
Elongation per inch under strain at elastic limit	do...	.004100
Reduction in diameter at point of rupture	do...	.115
Reduction in area after rupture, per cent of original section		40.3
Position of rupture		".45 from neck
Character of broken surface		fine silky, irregular surface, serrated
Elongation of inch sections		".05, ".06, ".25*

No. 6630.

Oil tempered and annealed at low heat.
Marks, (7) S.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001333	.000366	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002000	.000333	....	....	
70,000	.002367	.000367	....	....	
80,000	.002700	.000333	....	....	
90,000	.003033	.000333	....	....	
100,000	.003400	.000367	....	....	
110,000	.003767	.000367	....	....	
115,000	.003933	.000166	....	....	
120,000	.004100	.000167	....	....	
125,000	.004300	.000200	....	....	
130,000	.004467	.000167	....	....	Elastic limit.
131,000	.018333	.013866	....	....	
132,000	.019667	.001334	....	....	
133,000	.020667	.001000	....	....	
147,050	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	147,050
Elastic limit per square inch of original section	do...	130,000
Elongation per inch after rupture	inch..	.1133
Elongation per inch under strain at elastic limit	do...	.004467
Reduction in diameter at point of rupture	do...	.095
Reduction in area after rupture, per cent of original section		84.0
Position of rupture		1".13 from neck
Character of broken surface		fine silky, cup shaped, serrated
Elongation of inch sections		".05, ".17*, ".12*

No. 6639.

Oil tempered at low heat and annealed at high heat.
Marks, (5) S.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000667	.000367	....	....	
30,000	.001000	.000333	....	....	
40,000	.001333	.000333	....	....	
50,000	.001700	.000367	0.	....	
60,000	.002067	.000367	....	....	
66,000	.002300	.000233	....	....	Elastic limit.
67,000	.010167	.007867	....	....	
68,000	.010400	.000233	....	....	
70,000	.010667	.000267	....	....	
72,000	.011667	.001000	....	....	
76,000	.014333	.002666	....	....	
80,000	.017000	.002667	....	....	
84,000	.020000	.003000	....	....	
88,000	.022667	.002667	....	....	
92,000	.026333	.003666	....	....	
96,000	.030167	.003834	....	....	
100,000	.034000	.003833	....	....	
104,000	.039000	.005000	....	....	
108,000	.047000	.008000	....	....	
119,700	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	119,700
Elastic limit per square inch of original section	do...	66,000
Elongation per inch after rupture	inch..	.1900
Elongation per inch under strain at elastic limit	do...	.002300
Reduction in diameter at point of rupture	do...	.155
Reduction in area after rupture, per cent of original section		51.9
Position of rupture		".75 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		".32*, ".12, ".13

No. 6640.

Oil tempered at low heat, annealed at bright cherry color.
Marks, (5) S.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000667	.000367	....	....	
30,000	.001000	.000333	....	....	
40,000	.001333	.000333	....	....	
50,000	.001700	.000367	0.	....	
60,000	.002000	.000300	....	....	
70,000	.002367	.000367	....	....	
73,000	.002433	.000066	....	....	
74,000	.002467	.000034	....	....	Elastic limit.
75,000	.021333	.018866	....	....	
76,000	.022000	.000667	....	....	
78,000	.023267	.001267	....	....	
80,000	.025333	.002066	....	....	
84,000	.029333	.004000	....	....	
88,000	.034167	.004834	....	....	
92,000	.041000	.006833	....	....	
96,000	.048000	.007000	....	....	
100,000	.058667	.010667	....	....	
108,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	108,500
Elastic limit per square inch of original section	do...	74,000
Elongation per inch after rupture	inch..	.2167
Elongation per inch under strain at elastic limit	do...	.002467
Reduction in diameter at point of rupture	do...	.195
Reduction in area after rupture, per cent of original section		62.2
Position of rupture		1" from neck
Character of broken surface		fine, silky
Elongation of inch sections		".38*, ".15, ".12

No. 6723.

Marks, (4) S.
Heated a low red and cooled in oil.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000333	.000266	....	....	
20,000	.000667	.000334	....	....	
30,000	.001033	.000366	....	....	
40,000	.001433	.000400	.000033	.000033	
50,000	.001800	.000367	....	....	
60,000	.002167	.000367	.000033	0.	
70,000	.002533	.000366	....	....	Elastic limit.
71,000	.005000	.002467	....	....	
72,000	.007067	.002067	....	....	
73,000	.007667	.000600	....	....	
74,000	.008167	.000500	....	....	
76,000	.009500	.001333	....	....	
80,000	.011667	.002167	....	....	
84,000	.014000	.002333	....	....	
88,000	.016333	.002333	....	....	
92,000	.018667	.002334	....	....	
96,000	.021333	.002666	....	....	
100,000	.024333	.003000	....	....	
104,000	.027667	.003334	....	....	
108,000	.031333	.003666	....	....	
112,000	.035500	.004167	....	....	
129,800	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	129,800
Elastic limit per square inch of original section ....do...	70,000
Elongation per inch after rupture ....inch..	.1733
Elongation per inch under strain at elastic limit ....do...	.002533
Reduction in diameter at point of rupture....do...	.135
Reduction in area after rupture, per cent of original section	46.2
Position of rupture	1″.4 from neck
Character of broken surface....	fine silky
Elongation of inch sections	″.16, ″.26,* ″.10

No. 6724.

Marks, (4) S.
Heated bright red and cooled in air blast.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	....	....	
10,000	.000267	.000200	....	....	
20,000	.000567	.000300	....	....	
30,000	.000900	.000333	....	....	
40,000	.001233	.000333	....	....	
50,000	.001567	.000334	....	....	
60,000	.001967	.000400	....	....	
68,000	.002300 .004833	.000333 .002533	....	....	Elastic limit.
69,000	.006833	.002000	....	....	
70,000	.006900	.000567	....	....	
72,000	.008000	.001100	....	....	
76,000	.010267	.002267	....	....	
80,000	.012500	.002233	....	....	
84,000	.014833	.002333	....	....	
88,000	.017333	.002500	....	....	
92,000	.020000	.002667	....	....	
96,000	.022833	.002833	....	....	
100,000	.026000	.003167	....	....	
104,000	.029833	.003333	....	....	
108,000	.033833	.004000	....	....	
112,000	.038500	.005167	....	....	
128,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	128,100
Elastic limit per square inch of original section	do...	68,000
Elongation per inch after rupture	inch..	.1733
Elongation per inch under strain at elastic limit	do...	.002300
Reduction in diameter at point of rupture	do...	.125
Reduction in area after rupture, per cent of original section		43.3
Position of rupture		″.45 from neck
Character of broken surface		fine silky
Elongation of inch sections		″.25*, ″.12, ″.15

TABULATION OF TENSION SPECIMENS FROM RIFLE BARRELS THAT WERE DIFFICULT TO DRILL.

No. of test.	Marks.	Diameter.	Sectional.	Elastic limit per square inch.	Tensile strength per square inch.	Elongation in 3 inches.	Contraction of area.	Appearance of fracture.	Elongation of inch sections.	Remarks.
		Inch.	*Sq. inch.*	*Pounds.*	*Pounds.*	*Per cent.*	*Per cent.*		" " "	
6554	(1) S	.588 .300	.20	47,000	112,050	12.0	....	Fine granular	.14*, .13, .09	Breech specimen.
6555	(1) S	.505	.20	62,000	121,400	18.0	46.2	Fine silky	.11, .31*, .12	Muzzle specimen.
6556	(2) S	.588 .300	.20	53,000	128,350	9.0	....	Fine granular	.14*, .08, .05	Breech specimen.
6557	(2) S	.500	.20	61,000	128,600	12.3	23.9	Granular, radiating from silky spot in circumference.	.08, .10, .19*	Muzzle specimen.
6558	(3) S	.588 .300	.20	55,000	125,600	9.3	....	Fine granular	.05, .07, .16*	Breech specimen.
6559	(3) S	.505	.20	63,000	126,950	16.7	30.7	Silky, interspersed with fine granulation.	.08, .10, .22	Muzzle specimen.
6560	(4) S	.588 .300	.20	55,000	121,100	12.3	....	Fine granular	.08, .20*, .09	Breech specimen.
6561	(5) S	.588 .300	.20	55,000	118,200	14.7	....	Silky, interspersed with fine granulation.	.20, .15*, .09	Specimen 9¼" from breech.
6562	(6) S	.588 .300	.20	60,000	135,750	11.3	....	Fine granular	.07, .14*, .13	Specimen 12" from breech.
6563	(7) S	.588 .300	.20	59,000	128,900	11.7	....	do	.16*, .12, .07	Specimen 13⅜" from breech.
6564	(8) G	.588 .300	.20	62,000	129,000	15.0	....	Silky, interspersed with fine granulation.	.13, .24*, .08	Breech specimen.
6565	(8) G	.580 .300	.1936	65,000	129,100	12.7	....	Silky and fine granular, metal interspersed.	.19*, .13, .06	Specimen 17.2" from breech.
6566	(9) S	.588 .300	.20	48,000	112,600	14.0	....	Fine granular	.09, .21*, .12	Breech specimen.
6567	(9) S	.588 .300	.20	51,000	122,600	11.0	....	do	.18*, .09, .06	Specimen 23⅜" from breech.
6568	(10) S	.588 .300	.20	50,000	121,500	12.0	....	do	.10, .17*, .09	Breech specimen.
6569	(10) S	.588 .300	.20	58,000	128,900	14.7	....	do	.06, .09, .19*	Specimen 27" from breech.
6583	(5) S	.588 .300	.20	55,000	113,000	15.7	....	Silky, interspersed with fine granulation.	.08, .21*, .18	Breech specimen, annealed at low heat in lime.
6584	(6) S	.588 .300	.20	63,000	131,900	14.3	....	Fine granular	.10, .11, .22*	Breech specimen, annealed at heat above specimen (5) S in lime.
6585	(7) S	.588 .300	.20	60,000	126,100	12.8	....	Silky, interspersed with fine granulation.	.06, .07, .24*	Breech specimen, annealed at heat above specimen (6) S in lime.
6586	(1) S	.505	.20	61,000	125,100	14.8	40.3	Fine silky, trace of granulation	.06, .09, .28*	Specimen near muzzle end, annealed in lime.
6587	(2) S	.505	.20	64,000	132,550	14.0	34.0	Silky, interspersed with fine granulation.	.23*, .10, .09	Do.

6588	(8) S	.505	.20	66,000	127,000	15.0	48.8	Silky, trace of granulation	.09, .09, .27*	Do.
6601	(1) S	.505	.20	68,000	122,050	17.3	51.9	Fine silky, cup shaped	.10, .30*, .12	Piece of barrel heated low red and swaged down to ½ diameter, reheated and annealed in charcoal.
6602	(2) S	.505	.20	69,000	121,850	17.7	49.1	.....do	.09, .13, .31*	Do.
6603	(3) S	.505	.20	72,000	119,600	17.7	51.9	Fine silky, serrated	.08, .12, .33*	Do.
6604	(6) S	.505	.20	64,000	123,000	14.8	43.3	Fine silky, cup shaped		Section of barrel annealed in charcoal.
6605	(6) S	.505	.20	[1]58,000	127,040	16.0	29.8	Granular, radiating from a silky spot in the circumference.	.10, .21*, .17	Section of barrel annealed in charcoal at higher temperature than 6604.
6606	(8) G	.505	.20	70,000	121,500	17.3	49.1	Fine silky, cup shaped	.09, .13, .30*	Section of barrel annealed in charcoal.
6624	(4) S	.505	.20	81,000	114,450	19.0	59.8	Fine silky, serrated	.10, .11, .36*	Oil tempered and annealed.
6625	(5) S	.505	.20	107,000	127,600	14.3	54.6	.....do	.31*, .06, .06	Do.
6626	(7) S	.505	.20	118,000	143,500	12.0	40.3	Fine silky, irregular surface, serrated.	.05, .06, .25*	Do.
6630	(7) S	.505	.20	130,000	147,050	11.3	34.0	Fine silky, cup shaped, serrated	.05, .17, .12*	Oil tempered and annealed at low heat.
6639	(5) S	.505	.20	66,000	119,700	19.0	51.9	Fine silky, cup shaped	.32*, .12, .13	Oil tempered at low heat and annealed at high heat.
6640	(5) S	.505	.20	74,000	108,500	21.7	62.2	Fine silky	.38*, .15, .12	Oil tempered at low heat, annealed at bright cherry color.
6723	(4) S	.505	.20	70,000	129,800	17.8	46.2	.....do	.16, .26*, .10	Heated a low red and cooled in oil.
6724	(4) S	.505	.20	68,000	128,100	17.3	43.3	.....do	.25*, .12, .15	Heated bright red and cooled in air blast.

[1] Approxim ate.

NOTE.—Where two diameters are given, the specimens were hollow.

ROLLED BARRELS

AND

ROLLED AND ANNEALED BARRELS.

EXPLANATION FROM SPRINGFIELD ARMORY OF MARKS USED ON BARS.

"The letters R B E indicate rolled breech end; R M E—rolled muzzle end; R A B E—rolled annealed breech end; R A M E—rolled annealed muzzle end, and the numbers following denote the temperature expressed in degrees C. at which rolled and annealed."

No. 6653.

Rolled barrel.
Marks, R B E-940.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000600	.000300	....	....	
30,000	.000933	.000333	....	....	
40,000	.001333	.000400	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002000	.000333	....	....	
64,000	.002167	.000167	....	....	
65,000	.002200	.000033	....	....	Elastic limit.
66,000	.003667	.001467	....	....	
67,000	.004333	.000666	....	....	
68,000	.005500	.001167	....	....	
70,000	.007000	.001500	....	....	
72,000	.008333	.001333	....	....	
76,000	.011333	.003000	....	....	
80,000	.014000	.002667	....	....	
84,000	.017167	.003167	....	....	
88,000	.020167	.003000	....	....	
92,000	.023667	.003500	....	....	
96,000	.028000	.004333	....	....	
100,000	.032000	.004000	....	....	
104,000	.037333	.005333	....	....	
105,050	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	105,050
Elastic limit per square inch of original section	do...	65,000
Elongation per inch after rupture	inch..	.1600
Elongation per inch under strain at elastic limit	do...	.002200
Reduction in diameter at point of rupture	do...	.145
Reduction in area after rupture, per cent of original section		49.1
Position of rupture		1″.08 from neck
Character of broken surface		fine silky
Elongation of inch sections		″.08, ″.15, ″.25*

No. 6654.

Rolled barrel.
Marks, R B E–810.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000267	.000200	....	....	
20,000	.000600	.000333	....	....	
30,000	.000933	.000333	....	....	
40,000	.001300	.000367	....	....	
50,000	.001633	.000333	0.	....	
60,000	.002000	.000367	....	....	
66,000	.002233	.000233	....	....	
67,000	.002267	.000034	....	....	
68,000	.002300	.000033	....	....	Elastic limit.
69,000	.009333	.007033	....	....	
70,000	.010333	.001000	....	....	
71,000	.011000	.000667	....	....	
72,000	.011500	.000500	....	....	
76,000	.013667	.002167	....	....	
80,000	.017333	.003666	....	....	
84,000	.021333	.004000	....	....	
88,000	.024667	.003334	....	....	
92,000	.028667	.004000	....	....	
96,000	.033333	.004666	....	....	
100,000	.038667	.005334	....	....	
104,000	.045500	.006833	....	....	
116,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	116,000
Elastic limit per square inch of original section	do...	68,000
Elongation per inch after rupture	inch..	.1833
Elongation per inch under strain at elastic limit	do...	.002300
Reduction in diameter at point of rupture	do...	.155
Reduction in area after rupture, per cent of original section		51.9
Position of rupture		1″.2 from neck
Character of broken surface		fine silky
Elongation of inch sections		″.19*, ″.27*, ″.09

No. 6655.

Rolled barrel.
Marks, R B E–740.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	....	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001300	.000333	....	....	
50,000	.001667	.000367	....	....	
60,000	.002000	.000333	....	....	
70,000	.002367	.000367	....	....	
77,000	.002600	.000233	....	....	
78,000	.002633	.000033	....	....	Elastic limit.
79,000	.021667	.019034	....	....	
80,000	.023000	.001333	....	....	
84,000	.026500	.003500	....	....	
88,000	.033000	.006500	....	....	
92,000	.039333	.006333	....	....	
96,000	.045333	.006000	....	....	
100,000	.051000	.005667	....	....	
104,000	.062667	.011667	....	....	
112,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	112,000
Elastic limit per square inch of original section	do...	78,000
Elongation per inch after rupture	inch..	.2167
Elongation per inch under strain at elastic limit	do...	.002633
Reduction in diameter at point of rupture	do...	.165
Reduction in area after rupture, per cent of original section		54.6
Position of rupture		1″.4 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		″.12, ″.36*, ″.17

No. 6656.

Rolled barrel.
Marks, R B E–730.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.		
10,000	.000300	.000233			
20,000	.000633	.000333			
30,000	.001000	.000367			
40,000	.001333	.000333			
50,000	.001667	.000334			
60,000	.002033	.000366			
70,000	.002367	.000334			
75,000	.002567	.000200			Elastic limit.
	.016333	.013766			
76,000	017333	.001000			
78,000	.018833	.001500			
80,000	.020667	.001834			
84,000	.024500	.003833			
88,000	.028667	.004167			
92,000	.033000	.004333			
96,000	.039667	.006667			
100,000	.047333	.007666			
113,900					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	113,900
Elastic limit per square inch of original section	do...	75,000
Elongation per inch after rupture	inch..	.2067
Elongation per inch under strain at elastic limit	do...	.002567
Reduction in diameter at point of rupture	do...	165
Reduction in area after rupture, per cent of original section		54.6
Position of rupture		1″.6 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		″.13, ″.38*, ″.11

No. 6657.

Rolled barrel.
Marks, R B E–650.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000667	.000367	....	....	
30,000	.001000	.000333	....	....	
40,000	.001333	.000333	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002083	.000366	....	....	
70,000	.002367	.000334	....	....	
75,000	.002567	.000200	....	....	
77,000	.002667	.000100	....	....	
78,000	.002700	.000033	....	....	Elastic limit.
79,000	.016333	.013633	....	....	
80,000	.018167	.001834	....	....	
84,000	.026000	.007833	....	....	
88,000	.030667	.004667	....	....	
92,000	.035667	.005000	....	....	
96,000	.042333	.006666	....	....	
100,000	.050000	.007667	....	....	
112,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	112,000
Elastic limit per square inch of original section	do...	78,000
Elongation per inch after rupture	inch..	.2000
Elongation per inch under strain at elastic limit	do...	.002700
Reduction in diameter at point of rupture	do...	.165
Reduction in area after rupture, per cent of original section		54.6
Position of rupture		″.95 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		″.37*, ″.13, ″.10

No. 6658.

Rolled barrel.
Marks, R B E–600.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001300	.000333	....	....	
50,000	.001667	.000367	0.	....	
60,000	.002000	.000333	....	....	
70,000	.002367	.000367	....	....	
80,000	.002700	.000333	....	....	
84,000	.002867	.000167	....	....	Elastic limit.
85,000	.004833	.001966	....	....	
86,000	.006333	.001500	....	....	
88,000	.011000	.004667	....	....	
90,000	.013000	.002000	....	....	
94,000	.016667	.003667	....	....	
98,000	.022333	.005666	....	....	
102,000	.026667	.004334	....	....	
106,000	.031667	.005000	....	....	
110,000	.038333	.006666	....	....	
119,050	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	119,050
Elastic limit per square inch of original section	do...	84,000
Elongation per inch after rupture	inch..	.1367
Elongation per inch under strain at elastic limit	do...	.002867
Reduction in diameter at point of rupture	do...	.145
Reduction in area after rupture, per cent of original section	do...	49.1
Position of rupture		″.55 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		″.05, ″.08, ″.28*

No. 6659.

Rolled barrel.
Marks, R B·E–580.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001333	.000366	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002000	.000333	....	....	
70,000	.002333	.000333	....	....	
80,000	.002700	.000367	....	....	
82,000	.002733	.000033	....	....	
83,000	{ .002800	.000067	....	....	Elastic limit.
	.006500	.003700	....	....	
84,000	.008000	.001500	....	....	
88,000	.013167	.005167	....	....	
92,000	.017000	.003833	....	....	
96,000	.020667	.003667	....	....	
100,000	.025333	.004666	....	....	
104,000	.030333	.005000	....	....	
108,000	.037667	.007334	....	....	
112,000	.047000	.009333	....	....	
117,900	....	....	....	....	Tensile strength..

General summary.

Tensile strength per square inch of original section ....pounds..	117,900
Elastic limit per square inch of original section ....do...	83,000
Elongation per inch after rupture ....inch..	.1367
Elongation per inch under strain at elastic limit ....do...	.002800
Reduction in diameter at point of rupture....................do...	.145
Reduction in area after rupture, per cent of original section....................	49.1
Position of rupture	″.5 from neck
Character of broken surface....................	fine silky, cup shaped
Elongation of inch sections....................	″.05, ″.07, ″.29*

No. 6660.

Rolled barrel.
Marks, R B E–540.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000267	.000200	....	....	
20,000	.000600	.000333	....	....	
30,000	.000967	.000367	....	....	
40,000	.001300	.000333	....	....	
50,000	.001667	.000367	0.	....	
60,000	.002000	.000333	....	....	
70,000	.002367	.000367	....	....	
80,000	.002700	.000333	....	....	
88,000	.002967	.000267	....	....	
89,000	.003000	.000033	....	....	Elastic limit.
90,000	.007167	.004167	....	....	
92,000	.009667	.002500	....	....	
96,000	.015333	.005666	....	....	
100,000	.020000	.004667	....	....	
104,000	.023333	.003333	....	....	
108,000	.029333	.006000	....	....	
112,000	.036000	.006667	....	....	
120,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	120,100
Elastic limit per square inch of original section	do...	89,000
Elongation per inch after rupture	inch..	.1267
Elongation per inch under strain at elastic limit	do...	.003000
Reduction in diameter at point of rupture	do...	.145
Reduction in area after rupture, per cent of original section		49.1
Position of rupture		″.50 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		″.29*, ″.05, ″.04

No. 6661.

Rolled barrel.
Marks, R_2 B E–540.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40.000	.001300	.000333	....	....	
50,000	.001667	.000367	....	....	
60,000	.002000	.000333	0.	....	
70,000	.002333	.000333	....	....	
80,000	.002667	.000334	....	....	
87,000	.002933	.000266	....	....	
88,000	.003000	.000067	....	....	Elastic limit.
89,000	.006500	.003500	....	....	
90,000	.008000	.001500	....	....	
94,000	.013333	.005333	....	....	
96,000	.015500	.002167	....	....	
100,000	.020400	.004900	....	....	
104,000	.024000	.003600	....	....	
108,000	.029667	.005667	....	....	
112,000	.036667	.007000	....	....	
120,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	120,500
Elastic limit per square inch of original section ....do...	88,000
Elongation per inch after rupture ....inch..	.1267
Elongation per inch under strain at elastic limit ....do...	.003000
Reduction in diameter at point of rupture....do...	.145
Reduction in area after rupture, per cent of original section....	49.1
Position of rupture	″.6 from neck
Character of broken surface	fine silky, cup shaped
Elongation of inch sections....	″.04, ″.07, ″.27*

No. 6662.

Rolled barrel.
Marks, R_3 B E–540.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001300	.000333	....	....	
50,000	.001633	.000333	0.	....	
60,000	.001967	.000334	....	....	
70,000	.002333	.000366	....	....	
80,000	.002667	.000334	....	....	
85,000	.002833	.000166	....	....	
86,000	.002867	.000034	....	....	Elastic limit.
87,000	.008000	.005133	....	....	
88,000	.009000	.001000	....	....	
90,000	.012333	.003333	....	....	
92,000	.014333	.002000	....	....	
96,000	.019167	.004834	....	....	
100,000	.023500	.004333	....	....	
104,000	.027667	.004167	....	....	
108,000	.033667	.006000	....	....	
112,000	.043000	.009333	....	....	
119,800	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	119,800
Elastic limit per square inch of original section	do...	86,000
Elongation per inch after rupture	inch..	.1833
Elongation per inch under strain at elastic limit	do...	.002867
Reduction in diameter at point of rupture	do...	.145
Reduction in area after rupture, per cent of original section		49.1
Position of rupture		".55 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		".29*, ".06, ".05

No. 6663.

Rolled barrel.
Marks, R B E–510.
Diameter, ″.505.
Sectional area, .20 square inch
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001300	.000333	....	....	
50,000	.001667	.000367	0.	....	
60,000	.002000	.000333	....	....	
70,000	.002333	.000333	....	....	
72,000	.002400	.000067	....	....	
73,000	.002433	.000033	....	....	Elastic limit.
74,000	.004000	.001567	....	....	
75,000	.005333	.001333	....	....	
76,000	.006500	.001167	....	....	
78,000	.009667	.003167	....	....	
80,000	.011333	.001666	....	....	
84,000	.015000	.003667	....	....	
88,000	.018333	.003333	....	....	
92,000	.022000	.003667	....	....	
96,000	.026333	.004333	....	....	
100,000	.034667	.008334	....	....	
104,000	.036667	.002000	....	....	
108,000	.045000	.008333	....	....	
117,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	117,000
Elastic limit per square inch of original section	do...	78,000
Elongation per inch after rupture	inch..	.1733
Elongation per inch under strain at elastic limit	do..	.002433
Reduction in diameter at point of rupture	do..	.155
Reduction in area after rupture, per cent of original section		51.9
Position of rupture		″.75 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		″.09, ″.11, ″.32*

No. 6664.

Rolled barrel.
Marks, R B E-500.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233		....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001300	.000333	....	....	
50,000	.001667	.000367	0.	....	
60,000	.002000	.000333	....	....	
70,000	.002333	.000333	....	....	
80,000	.002700	.000367	....	....	
90,000	.003033	.000333	....	....	
97,000	.003300	.000267	....	....	
98,000	.003333	.000033	....	....	Elastic limit.
99,000	.004667	.001334	....	....	
100,000	.005333	.000666	....	....	
104,000	.008333	.003000	....	....	
108,000	.013000	.004667	....	....	
112,000	.017333	.004333	....	....	
116,000	.022333	.005000	....	....	
120,000	.027667	.005334	....	....	
127,600	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	127,600
Elastic limit per square inch of original section	do...	98,000
Elongation per inch after rupture	inch..	.1000
Elongation per inch under strain at elastic limit	do...	.003333
Reduction in diameter at point of rupture	do...	.125
Reduction in area after rupture, per cent of original section		43.3
Position of rupture		″.35 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		″.08, ″.03, ″.24*

No. 6665.

Rolled barrel.
Marks, R M E–940.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.000067	.000334	....	....	
40,000	.001300	.000333	....	....	
50,000	.001667	.000367	0.	....	
60,000	.002033	.000366	....	....	
70,000	.002367	.000334	....	....	
77,000	.002567	.000200	....	....	
78,000	.002600	.000033	....	....	Elastic limit.
79,000	.014333	.011733	....	....	
80,000	.015333	.001000	....	....	
84,000	.018000	.002667	....	....	
88,000	.021333	.003333	....	....	
92,000	.025000	.003667	....	....	
96,000	.029500	.004500	....	....	
100,000	.033667	.004167	....	....	
104,000	.040000	.006333	....	....	
119,550	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section......pounds..	119,550
Elastic limit per square inch of original section......do...	78,000
Elongation per inch after rupture......inch..	.1767
Elongation per inch under strain at elastic limit......do...	.002600
Reduction in diameter at point of rupture......do ..	.155
Reduction in area after rupture, per cent of original section......	51.9
Position of rupture......	″.95 from neck
Character of broken surface......	fine silky, cup shaped
Elongation of inch sections......	″.08, ″.13, ″.32*

No. 6666.

Rolled barrel.
Marks, R M E–810.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.		
10,000	.000300	.000200			
20,000	.000633	.000333			
30,000	.000967	.000334			
40,000	.001333	.000366			
50,000	.001667	.000334	0.		
60,000	.002000	.000333			
70,000	.002333	.000333			
77,000	.002567	.000234			
78,000	.002600	.000033			Elastic limit.
79,000	.015333	.012733			
80,000	.016500	.001167			
84,000	.019500	.003000			
88,000	.023333	.003833			
92,000	.026667	.003334			
96,000	.031667	.005000			
100,000	.037333	.005666			
104,000	.043333	.006000			
117,100					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	117,100
Elastic limit per square inch of original section	do...	78,000
Elongation per inch after rupture	inch..	.1933
Elongation per inch under strain at elastic limit	do...	.002600
Reduction in diameter at point of rupture	do...	.165
Reduction in area after rupture, per cent of original section		54.6
Position of rupture		at middle of stem
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		″.11, ″.35*, ″.12

No. 6667.

Rolled barrel.
Marks, R M E–740.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001300	.000333	....	....	
50,000	.001667	.000367	0.	....	
60,000	.002000	.000333	....	....	
70,000	.002333	.000333	....	....	
80,000	.002667	.000334	....	....	
90,000	.003033	.000366	....	....	Elastic limit.
91,000	.026000	.022967	....	....	
92,000	.027333	.001333	....	....	
96,000	.031667	.004334	....	....	
100,000	.037667	.006000	....	....	
104,000	.044000	.006333	....	....	
108,000	.053333	.009333	....	....	
117,400	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	117,400
Elastic limit per square inch of original section	do...	90,000
Elongation per inch after rupture	inch..	.2100
Elongation per inch under strain at elastic limit	do...	.003033
Reduction in diameter at point of rupture	do...	.175
Reduction in area after rupture, per cent of original section		57.2
Position of rupture		1″.7 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		″.13, ″.38*, ″.12

No. 6668.

Rolled barrel.
Marks, R M E–730.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.001000	.000367	....	....	
40,000	.001333	.000333	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002000	.000333	....	....	
70,000	.002333	.000333	....	....	
80,000	.002667	.000334	....	....	
81,000	.002700	.000033	....	....	
82,000	.002733	.000033	....	....	
83,000	.002767	.000034	....	....	Elastic limit.
	.019367	.016600	....	....	
84,000	.020000	.000633	....	....	
88,000	.024333	.004333	....	....	
92,000	.028667	.004334	....	....	
96,000	.033333	.004666	....	....	
100,000	.040000	.006667	....	....	
116,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	116,500
Elastic limit per square inch of original section	do...	83,000
Elongation per inch after rupture	inch..	.2000
Elongation per inch under strain at elastic limit	do...	.002767
Reduction in diameter at point of rupture	do...	.165
Reduction in area after rupture, per cent of original section		54.6
Position of rupture		1″.24 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		″.24*, ″.25*, ″.11

No. 6669.

Rolled barrel.
Marks, R M E–650.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001300	.000333	....	....	
50,000	.001667	.000367	0.	....	
60,000	.002000	.000333	....	....	
70,000	.002333	.000333	....	....	
80,000	.002667	.000334	....	....	
90,000	.003033	.000366	....	....	
95,000	.003167	.000134	....	....	
96,000	.003200	.000033	....	....	Elastic limit.
97,000	.036333	.033133	....	....	
98,000	.037667	.001334	....	....	
100,000	.040333	.002666	....	....	
104,000	.047667	.007334	....	....	
117,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	117,100
Elastic limit per square inch of original section	do...	96,000
Elongation per inch after rupture	inch..	.2233
Elongation per inch under strain at elastic limit	do...	.003200
Reduction in diameter at point of rupture	do...	.175
Reduction in area after rupture, per cent of original section		57.2
Position of rupture		1″.4 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		″.12, ″.39*, ″.16

No. 6670.

Rolled barrel.
Marks, R M E-600.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001300	.000333	....	....	
50,000	.001667	.000367	0.	....	
60,000	.002000	.000333	....	....	
70,000	.002333	.000333	....	....	
80,000	.002700	.000367	....	....	
87,000	.002933	.000233	....	....	
88,000	.002967	.000034	....	....	Elastic limit.
89,000	.003333	.000366	....	....	
90,000	.003967	.000634	....	....	
92,000	.008333	.004366	....	....	
96,000	.014667	.006334	....	....	
100,000	.019000	.004333	....	....	
104,000	.023667	.004667	....	....	
108,000	.028667	.005000	....	....	
112,000	.035000	.006333	....	....	
124,650	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	124,650
Elastic limit per square inch of original section	do...	88,000
Elongation per inch after rupture	inch..	.1500
Elongation per inch under strain at elastic limit	do...	.002967
Reduction in diameter at point of rupture	do...	.155
Reduction in area after rupture, per cent of original section		51.9
Position of rupture		″.75 from neck
Character of broken surface		fine silky, serrated
Elongation of inch sections		″.07, ″.09, ″.29*

No. 6671.

Rolled barrel.
Marks, R M E–580.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.001000	.000367	....	....	
40,000	.001333	.000333	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002000	.000333	....	....	
70,000	.002333	.000333	....	....	
80,000	.002700	.000367	....	....	
89,000	.002967	.000267	....	....	
90,000	.003000	.000033	....	....	
91,000	.003067	.000067	....	....	Elastic limit.
92,000	.003200 .011333	.000133 .008133	....	....	
93,000	.012333	.001000	....	....	
94,000	.013167	.000834	....	....	
96,000	.015000	.001833	....	....	
100,000	.020667	.005667	....	....	
104,000	.025167	.004500	....	....	
108,000	.030000	.004833	....	....	
112,000	.038167	.008167	....	....	
116,000	.047000	.008833	....	....	
123,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	123,500
Elastic limit per square inch of original section ....do...	91,000
Elongation per inch after rupture ....inch..	.1667
Elongation per inch under strain at elastic limit ....do...	.003067
Reduction in diameter at point of rupture...do...	.155
Reduction in area after rupture, per cent of original section	51.9
Position of rupture	″.9 from neck
Character of broken surface	fine silky, serrated
Elongation of inch sections	″.31*, ″.11, ″.08

No. 6672.

Rolled barrel.
Marks, R M E–540.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001333	.000366	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002000	.000333	....	....	
70,000	.002333	.000333	....	....	
80,000	.002667	.000334	....	....	
90,000	.003000	.000333	....	....	
92,000	.003067	.000067	....	....	Elastic limit.
93,000	.003200	.000133	....	....	
94,000	.003333	.000133	....	....	
95,000	.004000	.000667	....	....	
96,000	.005500	.001500	....	....	
98,000	.009667	.004167	....	....	
100,000	.012000	.002333	....	....	
104,000	.016667	.004667	....	....	
108,000	.021667	.005000	....	....	
112,000	.025667	.004000	....	....	
116,000	.031000	.005333	....	....	
130,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	130,500
Elastic limit per square inch of original section	do...	92,000
Elongation per inch after rupture	inch..	.1633
Elongation per inch under strain at elastic limit	do...	.003067
Reduction in diameter at point of rupture	do...	.145
Reduction in area after rupture, per cent of original section		49.1
Position of rupture		1″.60 from neck
Character of broken surface		fine silky, serrated
Elongation of inch sections		″.10, ″.30*, ″.09

No. 6673.

Rolled barrel.
Marks, R_2 M E–540.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.001000	.000367	....	....	
40,000	.001333	.000333	....	....	
50,000	.001700	.000367	0.	....	
60,000	.002033	.000333	....	....	
70,000	.002367	.000334	....	....	
80,000	.002700	.000333	....	....	
90,000	.003067	.000367	....	....	
92,000	.003133	.000066	....	....	
93,000	.003267	.000134	....	....	
94,000	.003333	.000066	....	....	
95,000	.003400	.000067	.000067	.000067	Elastic limit.
96,000	.003600	.000200	....	....	
97,000	.004167	.000567	....	....	
98,000	.005000	.000833	....	....	
100,000	.008667	.003667	....	....	
104,000	.013333	.004666	....	....	
108,000	.017333	.004000	....	....	
112,000	.021333	.004000	....	....	
116,000	.026333	.005000	....	....	
120,000	.032167	.005834	....	....	
132,400	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	132,400
Elastic limit per square inch of original section	do...	95,000
Elongation per inch after rupture	inch..	.1500
Elongation per inch under strain at elastic limit	do...	.003400
Reduction in diameter at point of rupture	do...	.145
Reduction in area after rupture, per cent of original section		49.1
Position of rupture		1″.4 from neck
Character of broken surface		fine silky, serrated
Elongation of inch sections		″.09, ″.26*, ″.10

No. 6674.

Rolled barrel.
Marks, R_3 M E–540.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001333	.000366	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002000	.000833	....	....	
70,000	.002367	.000367	....	....	
80,000	.002733	.000366	....	....	
90,000	.003100	.000367	....	....	
92,000	.003200	.000100	....	....	Elastic limit.
93,000	.003667	.000467	....	....	
94,000	.007667	.004000	....	....	
96,000	.011167	.003500	....	....	
100,000	.015667	.004500	....	....	
104,000	.020500	.004833	....	....	
108,000	.025000	.004500	....	....	
112,000	.030833	.005833	....	....	
116,000	.036000	.005167	....	....	
127,050	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section .... pounds..	127,050
Elastic limit per square inch of original section .... do...	92,000
Elongation per inch after rupture .... inch..	.1500
Elongation per inch under strain at elastic limit .... do...	.003200
Reduction in diameter at point of rupture .... do...	.155
Reduction in area after rupture, per cent of original section	51.9
Position of rupture	″.8 from neck
Character of broken surface	fine silky, serrated
Elongation of inch sections	″.07, ″.09, ″.29*

No. 6675.

Rolled barrel.
Marks, R M E–510.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	....	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001300	.000333	....	....	
50,000	.001633	.000333	.0	....	
60,000	.001967	.000334	....	....	
70,000	.002300	.000333	....	....	
80,000	.002667	.000367	....	....	
86,000	.002867	.000200	....	....	Elastic limit.
87,000	.013333	.010466	....	....	
88,000	.014167	.000834	....	....	
92,000	.019667	.005500	....	....	
96,000	.022333	.002666	....	....	
100,000	.028333	.006000	....	....	
104,000	.034333	.006000	....	....	
108,000	.041000	.006667	....	....	
112,000	.051333	.010333	....	....	
118,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	118,500
Elastic limit per square inch of original section	do...	86,000
Elongation per inch after rupture	inch..	.2083
Elongation per inch under strain at elastic limit	do...	.002867
Reduction in diameter at point of rupture	do...	.155
Reduction in area after rupture, per cent of original section		51.9
Position of rupture		1″.3 from neck
Character of broken surface		fine silky, serrated
Elongation of inch sections		″.12, ″.32*, ″.17

No. 6676.

Rolled barrel.
Marks, R M E-500.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001333	.000366	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002000	.000333	....	....	
70,000	.002333	.000333	....	....	
80,000	.002700	.000367	....	....	
90,000	.003033	.000333	....	....	
93,000	.003100	.000067	....	....	Elastic limit.
94,000	.003300	.000200	....	....	
95,000	.003433	.000133	....	....	
96,000	.003800	.000367	....	....	
97,000	.004000	.000200	....	....	
98,000	.004667	.000667	....	....	
100,000	.006667	.002000	....	....	
104,000	.011000	.004333	....	....	
108,000	.014333	.003333	....	....	
112,000	.017667	.003334	....	....	
116,000	.021333	.003666	....	....	
120,000	.025667	.004334	....	....	
138,450	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	138,450
Elastic limit per square inch of original section	do...	93,000
Elongation per inch after rupture	inch..	.1333
Elongation per inch under strain at elastic limit	do...	.003100
Reduction in diameter at point of rupture	do...	.135
Reduction in area after rupture, per cent of original section		46.2
Position of rupture		".8 from neck
Character of broken surface		fine silky, serrated
Elongation of inch sections		".26* "09 "05

No. 6677.

Rolled and annealed barrel.
Marks, R A B E–670.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000333	.000266	....	....	
20,000	.000667	.000334	....	....	
30,000	.001000	.000333	....	....	
40,000	.001333	.000333	....	....	
50,000	.001700	.000367	0.	....	
60,000	.002000	.000300	....	....	
66,000	.002267	.000267	....	....	
67,000	.002300 .012500	.000033 .010200	....	....	Elastic limit.
68,000	.013100	.000600	....	....	
70,000	.014000	.000900	....	....	
72,000	.015333	.001333	....	....	
76,000	.018333	.003000	....	....	
80,000	.021500	.003167	....	....	
84,000	.024500	.003000	....	....	
88,000	.028333	.003833	....	....	
92,000	.032667	.004334	....	....	
96,000	.037667	.005000	....	....	
100,000	.043667	.006000	....	....	
114,700	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	114,700
Elastic limit per square inch of original section	do...	67,000
Elongation per inch after rupture	inch..	.2000
Elongation per inch under strain at elastic limit	do...	.002300
Reduction in diameter at point of rupture	do...	.155
Reduction in area after rupture, per cent of original section		51.9
Position of rupture		1″.6 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		″.12, ″.36*, ″.12

No. 6678.

Rolled and annealed barrel.
Marks, R A B E–660.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.001000	.000367	....	....	
40,000	.001333	.000333	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002000	.000333	....	....	
67,000	.002267	.000267	....	....	
68,000	.002333	.000066	....	....	Elastic limı
	.016333	.014000	....	....	
70,000	.017333	.001000	....	....	
72,000	.019000	.001667	....	....	
76,000	.022667	.003667	....	....	
80,000	.027000	.004333	....	....	
84,000	.031667	.004667	....	....	
88,000	.037333	.005666	....	....	
92,000	.043333	.006000	....	....	
96,000	.052667	.009334	....	....	
100,000	.065000	.012333	....	....	
107,300	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section....................pounds..	107,300
Elastic limit per square inch of original section.............................do...	68,000
Elongation per inch after rupture..inch..	.2067
Elongation per inch under strain at elastic limit..........................do...	.002333
Reduction in diameter at point of rupture....................................do...	.145
Reduction in area after rupture, per cent of original section....................	49.1
Position of rupture..	1".2 from neck
Character of broken surface	fine silky, cup shaped
Elongation of inch sections..	".28*, ".22, ".12

No. 6679.

Rolled and annealed barrel.
Marks, R A B E–610.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001333	.000366	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002000	.000333	....	....	
63,000	.002133	.000133	....	....	
64,000	.002200	.000067	....	....	Elastic limit.
65,000	.012667	.010467	....	....	
66,000	.013333	.000666	....	....	
68,000	.014333	.001000	....	....	
72,000	.017167	.002834	....	....	
76,000	.020333	.003166	....	....	
80,000	.023667	.003334	....	....	
84,000	.027500	.003833	....	....	
88,000	.031667	.004167	....	....	
92,000	.036667	.005000	....	....	
96,000	.043333	.006666	....	....	
100,000	.051333	.008000	....	....	
110,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	110,900
Elastic limit per square inch of original section ....do...	64,000
Elongation per inch after rupture ....inch..	.2100
Elongation per inch under strain at elastic limit ....do...	.002200
Reduction in diameter at point of rupture....................do...	.165
Reduction in area after rupture, per cent of original section....................	54.6
Position of rupture	at middle of stem
Character of broken surface....................	fine silky, cup shaped
Elongation of inch sections....................	″.13, ″.37*, ″.13

No. 6680.

Rolled and annealed barrel.
Marks R A B E–600.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000033	.000033	0.	....	
10,000	.000267	.000234	....	....	
20,000	.000600	.000333	....	....	
30,000	.000933	.000333	....	....	
40,000	.001267	.000334	....	....	
50,000	.001600	.000333	0.	....	
60,000	.001933	.000333	....	....	
69,000	.002300	.000367	....	....	Elastic limit.
70,000	.017333	.015033	....	....	
72,000	.018500	.001167	....	....	
76,000	.021667	.003167	....	....	
80,000	.025333	.003666	....	....	
84,000	.029667	.004334	....	....	
88,000	.034000	.004333	....	....	
92,000	.039667	.005667	....	....	
96,000	.044333	.004666	....	....	
100,000	.058500	.014167	....	....	
109,600	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	109,600
Elastic limit per square inch of original section	do...	69,000
Elongation per inch after rupture	inch..	.2167
Elongation per inch under strain at elastic limit	do...	.002300
Reduction in diameter at point of rupture	do...	.165
Reduction in area after rupture, per cent of original section		54.6
Position of rupture		1″.45 from neck
Character of broken surface		fine, silky, cup shaped
Elongation of inch sections		″.11, ″.37*, ″.17

No. 6681.

Rolled and annealed barrel.
Marks, R_2 A B E–600.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000333	.000266	....	....	
20,000	.000667	.000334	....	....	
30,000	.001000	.000333	....	....	
40,000	.001333	.000333	....	....	
50,000	.001700	.000367	0.	....	
60,000	.002033	.000333	....	....	
67,000	.002333	.000300	....	....	Elastic limit.
	.004700	.002367	....	....	
68,000	.005700	.001000	....	....	
72,000	.011200	.005500	....	....	
76,000	.014700	.003500	....	....	
80,000	.017867	.003167	....	....	
84,000	.021333	.003466	....	....	
88,000	.025867	.004534	....	....	
92,000	.030667	.004800	....	....	
96,000	.036667	.006000	....	....	
100,000	.044333	.007666	....	....	
110,600	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	110,600
Elastic limit per square inch of original section	do...	67,000
Elongation per inch after rupture	inch..	.1933
Elongation per inch under strain at elastic limit	do...	.002333
Reduction in diameter at point of rupture	do...	.175
Reduction in area after rupture, per cent of original section		57.2
Position of rupture		″.95 from neck
Character of broken surface		fine silky
Elongation of inch sections		″.35*, ″.14, ″.09

No. 6682.

Rolled and annealed barrel.
Marks, R_3 A B E–600.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001333	.000366	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002000	.000333	....	....	
70,000	.002333	.000333	....	....	
75,000	.002567	.000234	....	....	Elastic limit.
76,000	.004067	.001500	....	....	
77,000	.005000	.000933	....	....	
78,000	.005767	.000767	....	....	
80,000	.007333	.001566	....	....	
84,000	.011500	.004167	....	....	
88,000	.014500	.003000	....	....	
92,000	.017333	.002833	....	....	
96,000	.021667	.004334	....	....	
100,000	.025333	.003666	....	....	
104,000	.030000	.004667	....	....	
108,000	.035667	.005667	....	....	
121,400	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section............pounds..	121,400
Elastic limit per square inch of original section............do...	75,000
Elongation per inch after rupture............inch..	.1467
Elongation per inch under strain at elastic limit............do...	.002567
Reduction in diameter at point of rupture............do...	.145
Reduction in area after rupture, per cent of original section............	49.1
Position of rupture............	″.65 from neck
Character of broken surface............	fine silky, cup shaped
Elongation of inch sections............	″.29*, ″.09, ″.06

No. 6683.

Rolled and annealed barrel.
Marks, R A B E–580
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001300	.000333	....	....	
50,000	.001667	.000367	0.	....	
60,000	.002000	.000333	....	....	
70,000	.002333	.000333	....	....	Elastic limit.
71,000	.003333	.001000	....	....	
72,000	.004000	.000667	....	....	
76,000	.007667	.003667	....	....	
80,000	.012333	.004666	....	....	
84,000	.015500	.003167	....	....	
88,000	.019333	.003833	....	....	
92,000	.022833	.003500	....	....	
96,000	.026667	.003834	....	....	
100,000	.032333	.005666	....	....	
104,000	.038333	.006000	....	....	
117,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	117,100
Elastic limit per square inch of original section ....do...	70,000
Elongation per inch after rupture ....inch..	.1833
Elongation per inch under strain at elastic limit ....do...	.002333
Reduction in diameter at point of rupture ....do...	.155
Reduction in area after rupture, per cent of original section	51.9
Position of rupture	″.9 from neck
Character of broken surface	fine silky, cup shaped
Elongation of inch sections	″.10, ″.13, ″.32*

No. 6684.

Rolled and annealed barrel.
Marks, R_2 A B E–580.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001300	.000333	....	....	
50,000	.001667	.000367	0.	....	
60,000	.002000	.000333	....	....	
70,000	.002333	.000333	....	....	
71,000	.002367	.000034	....	....	
72,000	.002433	.000066	....	....	Elastic limit.
73,000	.004500	.002067	....	....	
74,000	.005500	.001000	....	....	
76,000	.007333	.000833	....	....	
80,000	.012667	.005334	....	....	
84,000	.015833	.003166	....	....	
88,000	.019333	.003500	....	....	
92,000	.023333	.004000	....	....	
96,000	.027667	.004334	....	....	
100,000	.032667	.005000	....	....	
104,000	.039667	.007000	....	....	
116,050	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	116,050
Elastic limit per square inch of original section	do...	72,000
Elongation per inch after rupture	inch..	.1867
Elongation per inch under strain at elastic limit	do...	.002433
Reduction in diameter at point of rupture	do...	.155
Reduction in area after rupture, per cent of original section		51.9
Position of rupture		″.9 from neck
Character of broken surface		Fine silky, cup shaped
Elongation of inch sections		″.11, ″.13, ″.32*

No. 6685.

Rolled and annealed barrel.
Marks, R. A. B. E.-570.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001300	.000333	....	....	
50,000	.001667	.000367	0.	....	
60,000	002000	.000333	....	....	
70,000	.002367	.000367	....	....	
71,000	.002400	.000033	....	....	Elastic limit.
72,000	.005067	.002667	....	....	
74,000	.006933	.001866	....	....	
76,000	.009667	.002734	....	....	
80,000	.013000	.003333	....	....	
84,000	.016000	.003000	....	....	
88,000	.019333	.003333	....	....	
92,000	.023000	.003667	....	....	
96,000	.027333	.004333	....	....	
100,000	.032000	.004667	....	....	
104,000	.038333	.006333	....	....	
108,000	.046333	.008000	....	....	
117,550	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	117,550
Elastic limit per square inch of original section ....do...	71,000
Elongation per inch after rupture ....inch..	.1900
Elongation per inch under strain at elastic limit ....do...	.002400
Reduction in diameter at point of rupture............do...	.155
Reduction in area after rupture, per cent of original section............	51.9
Position of rupture............	1″.4 from neck
Character of broken surface............	fine silky, cup shaped
Elongation of inch sections............	″.10, ″.33*, ″.14

No. 6686.

Rolled and annealed barrel.
Marks, R, A. B. E.-570.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001333	.000366	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002000	.000333	....	....	
70,000	.002333	.000333	....	....	
72,000	.002400	.000067	....	....	Elastic limit.
73,000	.004267	.001867	....	....	
74,000	.005167	.000900	....	....	
76,000	.007000	.001833	....	....	
80,000	.012667	.005667	....	....	
84,000	.016167	.003500	....	....	
88,000	.020000	.003833	....	....	
92,000	.024000	.004000	....	....	
96,000	.028000	.004000	....	....	
100,000	.035000	.007000	....	....	
104,000	.040000	.005000	....	....	
116,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section..........pounds..	116,000
Elastic limit per square inch of original section..........do...	72,000
Elongation per inch after rupture..........inch..	.1633
Elongation per inch under strain at elastic limit..........do...	.002400
Reduction in diameter at point of rupture..........do...	.155
Reduction in area after rupture, per cent of original section..........	51.9
Position of rupture..........	″.6 from neck
Character of broken surface..........	fine silky, cup shaped
Elongation of inch sections..........	″.31*, ″.10, ″.06

No. 6687.

Rolled and annealed barrel.
Marks, R A M E–670.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001333	.000366	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002000	.000333	....	....	
70,000	.002333	.000333	....	....	
80,000	.002667	.000334	....	....	Elastic limit.
	.010500	.007833	....	....	
82,000	.012000	.001500	....	....	
84,000	.014667	.002667	....	....	
88,000	.019000	.004333	....	....	
92,000	.023667	.004667	....	....	
96,000	.029833	.005666	....	....	
100,000	.034833	.005500	....	....	
104,000	.042500	.007667	....	....	
115,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	115,100
Elastic limit per square inch of original section	do...	80,000
Elongation per inch after rupture	inch..	.1933
Elongation per inch under strain at elastic limit	do...	.002667
Reduction in diameter at point of rupture	do...	.165
Reduction in area after rupture, per cent of original section		54.6
Position of rupture		1″.3 from neck
Character of broken surface		fine silky, serrated
Elongation of inch sections		″.17, ″.31*, ″.10

No. 6688.

Rolled and annealed barrel.
Marks, R A M E–660.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001333	.000366	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002000	.000333	....	....	
68,000	.002267	.000267	....	....	
69,000	.002300	.000033	....	....	Elastic limit.
70,000	.015833	.013533	....	....	
72,000	.017667	.001834	....	....	
76,000	.021000	.003333	....	....	
80,000	.024833	.003833	....	....	
84,000	.029000	.004167	....	....	
88,000	.034333	.005333	....	....	
92,000	.040333	.006000	....	....	
96,000	.048000	.007667	....	....	
100,000	.057667	.009667	....	....	
108,800	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	108,800
Elastic limit per square inch of original section	do...	69,000
Elongation per inch after rupture	inch..	.2100
Elongation per inch under strain at elastic limit	do...	.002300
Reduction in diameter at point of rupture	do...	.135
Reduction in area after rupture, per cent of original section		46.2
Position of rupture		1″.50 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		″.16, ″.34*, ″.13

No. 6689.

Rolled and annealed barrel.
Marks, R A M E–610.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001300	.000333	....	....	
50,000	.001600	.000300	0.	....	
60,000	.002000	.000400	....	....	
67,000	.002233	.000233	....	....	
68,000	.002300	.000067	....	....	Elastic limit.
69,000	.012667	.010367	....	....	
70,000	.013400	.000733	....	....	
72,000	.014333	.000933	....	....	
76,000	.017000	.002667	....	....	
80,000	.020000	.003000	....	....	
84,000	.023000	.003000	....	....	
88,000	.027000	.004000	....	....	
92,000	.030667	.003667	....	....	
96,000	.036333	.005666	....	....	
100,000	.041333	.005000	....	....	
114,850	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	114,850
Elastic limit per square inch of original section	do...	68,000
Elongation per inch after rupture	inch..	.2033
Elongation per inch under strain at elastic limit	do...	.002300
Reduction in diameter at point of rupture	do...	.155
Reduction in area after rupture, per cent of original section		51.9
Position of rupture		at middle of stem
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		″.14, ″.36*, ″.11

No. 6690.

Rolled and annealed barrel.
Marks, R A M E-600.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.000067	.000334	....	....	
40,000	.001300	.000333	....	....	
50,000	.001667	.000367	0.	....	
60,000	.002000	.000333	....	....	
70,000	.002333	.000633	....	....	
71,000	.002367	.000034	....	....	Elastic limit.
72,000	.016333	.013966	....	....	
74,000	.017833	.001500	....	....	
76,000	.019667	.001834	....	....	
80,000	.023000	.003333	....	....	
84,000	.026167	.003167	....	....	
88,000	.030500	.004333	....	....	
92,000	.035167	.004667	....	....	
96,000	.041000	.005833	....	....	
100,000	.048333	.007333	....	....	
111,700	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	111,700
Elastic limit per square inch of original section	do...	71,000
Elongation per inch after rupture	inch..	.2000
Elongation per inch under strain at elastic limit	do...	.002367
Reduction in diameter at point of rupture	do...	.165
Reduction in area after rupture, per cent of original section		54.6
Position of rupture		1" from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		".10, ".16, ".34*

No. 6691.

Rolled and annealed barrel.
Marks, R_2 A M E–600.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000267	.000200	....	....	
20,000	.000600	.000333	....	....	
30,000	.000967	.000367	....	....	
40,000	.001300	.000333	....	....	
50,000	.001667	.000367	0.	....	
60,000	.002000	.000333	....	....	
70,000	.002333	.000333	....	....	
71,000	.015333	.013000	....	....	Elastic limit,
72,000	.016333	.001000	....	....	
76,000	.020833	.004500	....	....	
80,000	.024833	.004000	....	....	
84,000	.030000	.005167	....	....	
88,000	.035667	.005667	....	....	
92,000	.044000	.008333	....	....	
96,000	.055000	.011000	....	....	
104,450	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section.......pounds..	104,450
Elastic limit per square inch of original section.......do...	71,000
Elongation per inch after rupture.......inch..	.2300
Elongation per inch under strain at elastic limit.......do...	.015333
Reduction in diameter at point of rupture.......do...	.185
Reduction in area after rupture, per cent of original section.......	59.8
Position of rupture.......	1″.25 from neck
Character of broken surface.......	fine silky, cup shaped
Elongation of inch sections.......	″.25*, ″.31*, ″.13

No. 6692.

Rolled and annealed barrel.
Marks, R_3 A M E-600.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000667	.000367	....	....	
30,000	.001000	.000333	....	....	
40,000	.001333	.000333	....	....	
50,000	.001700	.000367	0.	....	
60,000	.002033	.000333	....	....	
70,000	.002400	.000367	....	....	
80,000	.002733	.000333	....	....	
86,000	.002967	.000234	....	....	Elastic limit.
87,000	.004500	.001533	....	....	
88,000	.006333	.001833	....	....	
92,000	.012833	.006500	....	....	
96,000	.016667	.003834	....	....	
100,000	.021000	.004333	....	....	
104,000	.025000	.004000	....	....	
108,000	.030333	.005333	....	....	
112,000	.036333	.006000	....	....	
116,000	.044333	.008000	....	....	
125,150	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	125,150
Elastic limit per square inch of original section	do	86,000
Elongation per inch after rupture	inch	.1700
Elongation per inch under strain at elastic limit	do	.002967
Reduction in diameter at point of rupture	do	.155
Reduction in area after rupture, per cent of original section		51.9
Position of rupture		1″.1 from neck
Character of broken surface		fine silky, serrated
Elongation of inch sections		″.10, ″.13, ″.28*

No. 6693.

Rolled and annealed barrel.
Marks, R A M E-580.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000267	.000200	....	....	
20,000	.000633	.000366	....	....	
30,000	.000967	.000334	....	....	
40,000	.001300	.000333	....	....	
50,000	.001667	.000367	0.	....	
60,000	.002000	.000333	....	....	
70,000	.002333	.000333	....	....	
77,000	.002600	.000267	....	....	Elastic limit.
78,000	.013667	.011067	....	....	
79,000	.015000	.001333	....	....	
80,000	.015667	.000667	....	....	
84,000	.020333	.004666	....	....	
88,000	.024833	.004500	....	....	
92,000	.030000	.005167	....	....	
96,000	.036333	.006333	....	....	
100,000	.045000	.008667	....	....	
110,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section .... pounds..	110,500
Elastic limit per square inch of original section .... do...	77,000
Elongation per inch after rupture .... inch..	.1933
Elongation per inch under strain at elastic limit .... do...	.002600
Reduction in diameter at point of rupture .... do...	.175
Reduction in area after rupture, per cent of original section	57.2
Position of rupture	".75 from neck
Character of broken surface	fine silky, serrated
Elongation of inch sections	".36*, ".18, ".09

No. 6694.

Rolled and annealed barrel.
Marks, R_2 A M E–580.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length .3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000267	.000200	....	....	
20,000	.000600	.000333	....	....	
30,000	.000933	.000333	....	....	
40,000	.001300	.000367	....	....	
50,000	.001667	.000367	0.	....	
60,000	.002000	.000333	....	....	
70,000	.002333	.000333	....	....	
80,000	.002667	.000334	....	....	
83,000	.002767	.000100	....	....	
84,000	.002833	.000066	....	....	Elastic limit.
	.007667	.004834	....	....	
86,000	.014167	.006500	....	....	
88,000	.016000	.001833	....	....	
92,000	.021000	.005000	....	....	
96,000	.026000	.005000	....	....	
100,000	.031667	.005667	....	....	
104,000	.039000	.007333	....	....	
108,000	.047333	.008333	....	....	
116,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	116,900
Elastic limit per square inch of original section	do...	84,000
Elongation per inch after rupture	inch..	.2000
Elongation per inch under strain at elastic limit	do...	.002833
Reduction in diameter at point of rupture	do...	.165
Reduction in area after rupture, per cent of original section		54.6
Position of rupture		1″ 1 from neck
Character of broken surface		fine silky, serrated
Elongation of inch sections		″.29*, ″.18, ″.13

No. 6695.

Rolled and annealed barrel.
Marks, R A M E–570
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001333	.000366	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002000	.000333	....	....	
68,000	.002300	.000300	....	....	Elastic limit.
69,000	.011000	.008700	....	....	
70,000	.011667	.000667	....	....	
72,000	.012667	.001000	....	....	
76,000	.015333	.002666	....	....	
80,000	.018333	.003000	....	....	
84,000	.021333	.003000	....	....	
88,000	.024333	.003000	....	....	
92,000	.028000	.003667	....	....	
96,000	.032167	.004167	....	....	
100,000	.036667	.004500	....	....	
117,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	117,500
Elastic limit per square inch of original section	do...	68,000
Elongation per inch after rupture	inch..	.1933
Elongation per inch under strain at elastic limit	do...	.002300
Reduction in diameter at point of rupture	do...	.155
Reduction in area after rupture, per cent of original section		51.9
Position of rupture		1″.4 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		″.10, ″.30*, ″.18

No. 6696.

Rolled and annealed barrel.
Marks, R_2 A M E–570.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001300	.000333	....	....	
50,000	.001667	.000367	0.	....	
60,000	.002000	.000333	....	....	
70,000	.002333	.000333	....	....	
80,000	.002667	.000334	....	....	
86,000	.002967	.000300	....	....	
87,000	.003000	.000033	....	....	Elastic limit.
88,000	.020667	.017667	....	....	
92,000	.026333	.005666	....	....	
96,000	.031667	.005334	....	....	
100,000	.038333	.006666	....	....	
104,000	.048333	.010000	....	....	
114,400	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	114,400
Elastic limit per square inch of original section	do...	87,000
Elongation per inch after rupture	inch..	.2033
Elongation per inch under strain at elastic limit	do...	.003000
Reduction in diameter at point of rupture	do...	.175
Reduction in area after rupture, per cent of original section		57.2
Position of rupture		1″.5 from neck
Character of broken surface		fine silky, serrated
Elongation of inch sections		″.11, ″.37*, ″.13

TABULATION OF TENSION SPECIMENS FROM ROLLED BARRELS AND ROLLED AND ANNEALED BARRELS.

ROLLED BARRELS.

No. of test.	Marks.	Diameter.	Sectional area.	Elastic limit per square inch.	Tensile strength per square inch.	Elongation in 3 inches.	Contraction of area.	Appearance of fracture.	Elongation of inch sections.	Remarks.
		Inch.	*Sq. inch.*	*Pounds.*	*Pounds.*	*Per cent.*	*Per cent.*		″ ″ ″	
6653	R B E-940	0.505	0.20	65,000	105,050	16.0	49.1	Fine silky	.08, .15, .25*	
6654	R B E-810	.505	.20	68,000	116,000	18.3	51.9	do	.19, .27*, .09	
6655	R B E-740	.505	.20	78,000	112,000	21.7	54.6	Fine silky, cup shaped	.12, .36*, .17	
6656	R B E-730	.505	.20	75,000	113,900	20.7	54.6	do	.13, .38*, .11	
6657	R B E-650	.505	.20	78,000	112,000	20.0	54.6	do	.37*, .13, .10	
6658	R B E-600	.505	.20	84,000	119,050	13.7	49.1	do	.05, .08, .28*	
6659	R B E-580	.505	.20	83,000	117,900	13.7	49.1	do	.05, .07, .29*	
6660	R B E-540	.505	.20	89,000	120,100	12.7	49.1	do	.29*, .05, .04	
6661	R_2B E-540	.505	.20	88,000	120,500	12.7	49.1	do	.04, .07, .27*	
6662	R_3B E-540	.505	.20	86,000	119,800	13.3	49.1	do	.29*. .06, .05	
6663	R B E-510	.505	.20	73,000	117,000	17.3	51.9	do	.09, .11, .32*	
6664	R B E-500	.505	.20	98,000	127,600	10.0	48.3	do	.08, .03, .24*	
6665	R M E-940	.505	.20	78,000	119,550	17.7	51.9	do	.08, .13, .32*	
6666	R M E-810	.505	.20	78,000	117,100	19.3	54.6	do	.11, .35* .12	
6667	R M E-740	.505	.20	90,000	117,400	21.0	57.2	do	.13, .38*, .12	
6668	R M E-730	.505	.20	83,000	116,500	20.0	54.6	do	.24*, .25*, .11	
6669	R M E-650	.505	.20	96,000	117,100	22.3	57.2	do	.12, .39*, .16	
6670	R M E-600	.505	.20	88,000	124,650	15.0	51.9	Fine silky, serrated	.07, .09 .29*	
6671	R M E-580	.505	.20	91,000	128,500	16.7	51.9	do	.31*, .11, .08	
6672	R M E-540	.505	.20	92,000	130,500	16.3	49.1	do	.10, .30*, .09	
6673	R_2M E-540	.505	.20	95,000	132,400	15.0	49.1	do	.09, .26, .10	
6674	R_3M E-540	.505	.20	92,000	127,050	15.0	51.9	do	.07, .09, .29*	
6675	R M E-510	.505	.20	86,000	118,500	20.3	51.9	do	.12, .32*, .17	
6676	R M E-500	.505	.20	98,000	138,450	13.3	46.2	do	.26*, .09, .05	

TABULATION OF TENSION SPECIMENS FROM ROLLED BARRELS AND ROLLED AND ANNEALED BARRELS—Continued.

ROLLED AND ANNEALED BARRELS.

No. of test.	Marks.	Diameter.	Sectional area.	Elastic limit per square inch.	Tensile strength per square inch.	Elongation in 8 inches.	Contraction of area.	Appearance of fracture.	Elongation of inch sections.	Remarks.
		Inch.	*Sq. inch.*	*Pounds.*	*Pounds.*	*Per cent.*	*Per cent.*		″ ″ ″	
6677	R A B E-670	0.505	0.20	67,000	114,700	20.0	51.9	Fine silky, cup shaped	.12, .36*, .12	
6678	R A B E-660	.505	.20	68,000	107,300	20.7	49.1	do	.28*, .22, .12	
6679	R A B E-610	.505	.20	64,000	110,900	21.0	54.6	do	.13, .37*, .13	
6680	R A B E-600	.505	.20	69,000	109,600	21.7	54.6	do	.11, .37*, .17	
6681	R_2A B E-600	.505	.20	67,000	110,600	19.3	57.2	Fine silky	.35*, .14, .09	
6682	R_3A B E-600	.505	.20	75,000	121,400	14.7	49.1	Fine silky, cup shaped	.29*, .09, .06	
6683	R A B E-580	.505	.20	70,000	117,100	18.3	51.9	do	.10, .13, .32*	
6684	R_2A B E-580	.505	.20	72,000	116,050	18.7	51.9	do	.11, .13, .32*	
6685	R A B E-570	.505	.20	71,000	117,550	19.0	51.9	do	.10, .33*, .14	
6686	R_2A B E-570	.505	.20	72,000	116,000	16.3	51.9	do	.31*, .10, .08	
6687	R A M E-670	.505	.20	80,000	115,100	19.3	54.6	Fine silky, serrated	.17, .31*, .10	
6688	R A M E-660	.505	.20	69,000	108,800	21.0	46.2	Fine silky, cup shaped	.16, .34*, .13	
6689	R A M E-610	.505	.20	68,000	114,850	20.3	51.9	do	.14, .36*, .11	
6690	R A M E-600	.505	.20	71,000	111,700	20.0	54.6	do	.10, .16, .34	
6691	R_2A M E-600	.505	.20	71,000	104,450	23.0	59.8	do	.25, .31*, .13	
6692	R_3A M E-600	.505	.20	86,000	125,150	17.0	51.9	Fine silky, serrated	.10, .13, .28*	
6693	R A M E-580	.505	.20	77,000	110,500	19.3	57.2	do	.36*, .13, .09	
6694	R_2A M E-580	.505	.20	84,000	116,900	20.0	54.6	do	.29*, .13, .13	
6695	R A M E-570	.505	.20	68 000	117,500	19.3	51.9	Fine silky, cup shaped	.10, .30*, .18	
6696	R_2A M E-570	.505	.20	87,000	114,400	20.3	57.2	Fine silky, serrated	.11, .37*, .13	

RECEIVER STEEL.

.30 CALIBER RIFLES.

No. 6443.

From end of bar.
Marks, R E.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000333	.000233	....	....	
20,000	.000667	.000334	....	....	
30,000	.001000	.000333	0.	....	
40,000	.001333	.000333	....	....	
47,000	.001600	.000267	....	....	
48,000	.001633	.000033	....	....	Elastic limit.
49,000	.021667	.020034	....	....	
50,000	.023267	.001600	....	....	
51,000	.024333	.001066	....	....	
52,000	.026000	.001667	....	....	
54,000	.029333	.003333	....	....	
56,000	.033333	.004000	....	....	
58,000	.037000	.003667	....	....	
60,000	.042167	.005167	....	....	
62,000	.046667	.004500	....	....	
64,000	.053000	.006333	....	....	
66,000	.061000	.008000	....	....	
76,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	76,100
Elastic limit per square inch of original section	do...	48,000
Elongation per inch after rupture	inch..	.2800
Elongation per inch under strain at elastic limit	do...	.001633
Reduction in diameter at point of rupture	do...	.145
Reduction in area after rupture, per cent of original section		49.1
Position of rupture		1".7 from neck
Character of broken surface		fine silky
Elongation of inch sections		".21, ".44*, ".19

No. 6444.

From middle of bar.
Marks, R M.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000133	.000133	0.	....	
10,000	.000333	.000200	....	....	
20,000	.000667	.000334	....	....	
30,000	.001000	.000333	0.	....	
40,000	.001367	.000367	....	....	
45,000	.001567	.000200	....	....	Elastic limit.
46,000	.018667	.017100	....	....	
47,000	.019900	.001233	....	....	
48,000	.021167	.001267	....	....	
49,000	.022267	.001100	....	....	
50,000	.024067	.001800	....	....	
52,000	.027333	.003266	....	....	
54,000	.030333	.003000	....	....	
56,000	.035000	.004667	....	....	
58,000	.039000	.004000	....	....	
60,000	.043333	.004333	....	....	
62,000	.049333	.006000	....	....	
64,000	.056000	.006667	....	....	
74,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	74,900
Elastic limit per square inch of original section	do...	45,000
Elongation per inch after rupture	inch..	.2700
Elongation per inch under strain at elastic limit	do...	.001567
Reduction in diameter at point of rupture	do...	.145
Reduction in area after rupture, per cent of original section		49.1
Position of rupture		at middle of stem
Character of broken surface		fine silky
Elongation of inch sections		″.20, ″.43*, ″.18

No. 6445.

From forged receiver after annealing.
Marks, R F 1.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000133	.000133	....	....	
10,000	.000333	.000200	....	....	
20,000	.000667	.000334	....	....	
30,000	.001000	.000333	0.	....	
39,000	.001300	.000300	....	....	Elastic limit.
40,000	.001967 .013900	.000667 .011933	....	....	
41,000	.014667	.000767	....	....	
42,000	.016733	.002066	....	....	
43,000	.017333	.000600	....	....	
44,000	.018767	.001434	....	....	
45,000	.020000	.001233	....	....	
46,000	.021333	.001333	....	....	
48,000	.024333	.003000	....	....	
50,000	.027667	.003334	....	....	
52,000	.030833	.002666	....	....	
54,000	.035433	.005100	....	....	
56,000	.039667	.004234	....	....	
58,000	.044667	.005000	....	....	
60,000	.050000	.005333	....	....	
62,000	.056667	.006667	....	....	
73,050	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	73,050
Elastic limit per square inch of original section ....do...	39,000
Elongation per inch after rupture ....inch..	.2633
Elongation per inch under strain at elastic limit ....do...	.001300
Reduction in diameter at point of rupture ....do...	.135
Reduction in area after rupture, per cent of original section	46.2
Position of rupture	1″.76 from neck
Character of broken surface	fine silky
Elongation of inch sections	″.17, ″.42*, ″.20

No. 6489.

Marks, R 1.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000133	.000133	0.	....	
10,000	.000333	.000200	....	....	
20,000	.000667	.000334	....	....	
30,000	.001033	.000366	....	....	
35,000	.001233	.000200	....	....	
40,000	.001400	.000167	....	....	
41,000	.001433	.000033	....	....	
42,000	.001467	.000034	....	....	
43,000	.001500	.000033	....	....	
44,000	.001600	.000100	....	....	Elastic limit.
45,000	.016333	.014733	....	....	
46,000	.017333	.001000	....	....	
47,000	.019267	.001934	....	....	
48,000	.020000	.000733	....	....	
50,000	.022500	.002500	....	....	
52,000	.025667	.003167	....	....	
54,000	.028667	.003000	....	....	
56,000	.032067	.003400	....	....	
58,000	.036333	.004266	....	....	
60,000	.041167	.004834	....	....	
62,000	.047500	.006333	....	....	
64,000	.051433	.003933	....	....	
66,000	.058833	.007400	....	....	
75,950	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	75,950
Elastic limit per square inch of original section	do...	44,000
Elongation per inch after rupture	inch..	.2700
Elongation per inch under strain at elastic limit	do...	.001600
Reduction in diameter at point of rupture	do...	.135
Reduction in area after rupture, per cent of original section		46.2
Position of rupture		1".70 from neck
Character of broken surface		silky
Elongation of inch sections		".19, ".41*, ".21

No. 6524.

Marks, R R 2.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.		
10,000	.000300	.000200			
20,000	.000633	.000333			
30,000	.001000	.000367			
40,000	.001333	.000333	0.		
41,000	.001367	.000034			
42,000	.001400	.000033			
43,000	.001433	.000033			Elastic limit.
44,000	.001633	.000200			
45,000	.004000	.002367			
46,000	.005833	.001833			
47,000	.010333	.004500			
48,000	.014000	.003667			
50,000	.014767	.000767			
52,000	.017000	.002233			
54,000	.020000	.003000			
56,000	.022667	.002667			
58,000	.025333	.002666			
60,000	.029000	.003667			
64,000	.034667	.005667			
68,000	.043000	.008333			
82,650					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	82,650
Elastic limit per square inch of original section	do...	43,000
Elongation per inch after rupture	inch..	.2500
Elongation per inch under strain at elastic limit	do...	.001433
Reduction in diameter at point of rupture	do...	.145
Reduction in area after rupture, per cent of original section		49.1
Position of rupture		at middle of stem
Character of broken surface		fine silky
Elongation of inch sections		".18, ".40, ".17

No. 6525.

Marks, R R 3.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	:001333	.000366	0.	....	Elastic limit.
41,000	.001567	.000234	....	....	
42,000	.009000	.007433	....	....	
43,000	.016667	.007667	....	....	
44,000	.017500	.000833	....	....	
45,000	.018000	.000500	....	....	
46,000	.019000	.001000	....	....	
48,000	.021667	.002667	....	....	
50,000	.024667	.003000	....	....	
52,000	.028333	.003666	....	....	
54,000	.032333	.004000	....	....	
56,000	.036000	.003667	....	....	
58,000	.041333	.005333	....	....	
60,000	.046667	.005334	....	....	
73,900	....	....:.......	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section..............pounds..	73,900
Elastic limit per square inch of original section..............do...	40,000
Elongation per inch after rupture..............inch..	.2767
Elongation per inch under strain at elastic limit..............do...	.001333
Reduction in diameter at point of rupture..............do...	.155
Reduction in area after rupture, per cent of original section..............	51.9
Position of rupture..............	at middle of stem
Character of broken surface..............	fine silky
Elongation of inch sections..............	″.18, ″.45*, ″.20

No. 6642.

Marks, R R 4.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000300	.000233	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001333	.000366	....	....	
47,000	.001600	.000267	....	....	
48,000	001633	.000033	....	....	Elastic limit.
49,000	.022167	.020534	....	....	
50,000	.024000	.001833	....	....	
52,000	.026333	.002333	....	....	
54,000	.030000	.003667	....	....	
56,000	.034000	.004000	....	....	
58,000	.039667	.005667	....	....	
60,000	.040667	.001000	....	....	
62,000	.050000	.009333	....	....	
75,950	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	75,950
Elastic limit per square inch of original section	do...	48,000
Elongation per inch after rupture	inch..	.2767
Elongation per inch under strain at elastic limit	do...	.001633
Reduction in diameter at point of rupture	do...	.155
Reduction in area after rupture, per cent of original section		51.9
Position of rupture		1".7 from neck
Character of broken surface		fine silky
Elongation of inch sections		".21, ".44*, ".18

No. 6750.

From forging.
Marks, A.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.	....	
10,000	.000267	.000200	....	....	
20,000	.000600	.000333	....	....	
30,000	.000933	.000333	....	....	
31,000	.000967	.000034	....	....	
32,000	.001000	.000033	....	....	Elastic limit.
33,000	.013333	.012333	....	....	
34,000	.020000	.006667	....	....	
35,000	.022667	.002667	....	....	
36,000	.025000	.002333	....	....	
38,000	.029667	.004667	....	....	
40,000	.036333	.006666	....	....	
42,000	.043333	.007000	....	....	
44,000	.050000	.006667	....	....	
56,550	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	56,550
Elastic limit per square inch of original section ....do...	32,000
Elongation per inch after rupture ....inch..	.3500
Elongation per inch under strain at elastic limit ....do...	.001000
Reduction in diameter at point of rupture ....do...	.215
Reduction in area after rupture, per cent of original section	66.9
Position of rupture	at middle of stem
Character of broken surface	silky, cup shaped
Elongation of inch sections..	″.24, ″.56*, ″.25

No. 6751.

From forging.
Marks, C.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	....	....	
40,000	.001300	.000333	....	....	
43,000	.001400	.000100	....	....	
44,000	.001433	.000033	....	....	Elastic limit.
45,000	.016000	.014567	....	....	
46,000	.017667	.001667	....	....	
47,000	.019333	.001666	....	....	
48,000	.020667	.001334	....	....	
50,000	.020667	.003000	....	....	
52,000	.026333	.003166	....	....	
54,000	.031000	.004167	....	....	
56,000	.035167	.004167	....	....	
58,000	.038667	.003500	....	....	
60,000	.045667	.007000	....	....	
74,050	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	74,050
Elastic limit per square inch of original section	do...	44,000
Elongation per inch after rupture	inch..	.2833
Elongation per inch under strain at elastic limit	do...	.001433
Reduction in diameter at point of rupture	do...	.175
Reduction in area after rupture, per cent of original section		57.2
Position of rupture		1".7 from neck
Character of broken surface		silky, cup shaped
Elongation of inch sections		".19, ".45*, ".21

No. 6752.

From forging.
Marks, D.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.		
10,000	.000300	.000200			
20,000	.000633	.000333			
30,000	.000967	.000334			
38,000	.001233	.000266			
39,000	.001300	.000067			Elastic limit.
40,000	.011667	.010367			
41,000	.012733	.001066			
42,000	.013667	.000934			
44,000	.016167	.002500			
46,000	.018333	.002166			
50,000	.025000	.006667			
54,000	.031333	.006333			
58,000	.040167	.008834			
62,000	.051667	.011500			
75,300					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	75,300
Elastic limit per square inch of original section	do...	39,000
Elongation per inch after rupture	inch..	.2633
Elongation per inch under strain at elastic limit	do...	.001300
Reduction in diameter at point of rupture	do...	.135
Reduction in area after rupture, per cent of original section		46.2
Position of rupture		at middle of stem
Character of broken surface		silky
Elongation of inch sections		″.19, ″.40*, ″.20

No. 6897.

From forging.
Marks, R R 5.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.000967	.000334	0.	....	
40,000	.001333 .016333	.000366 .015000	....	....	Elastic limit.
41,000	.016833	.000500	....	....	
42,000	.017333	.000500	....	....	
44,000	.019667	.002334	....	....	
48,000	.025667	.006000	....	....	
52,000	.033667	.008000	....	....	
56,000	.042667	.009000	....	....	
60,000	.054167	.011500	....	....	
71,950	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	71,950
Elastic limit per square inch of original section ....do...	40,000
Elongation per inch after rupture ....inch..	.2600
Elongation per inch under strain at elastic limit ....do...	.001333
Reduction in diameter at point of rupture ....do...	.145
Reduction in area after rupture, per cent of original section	49.1
Position of rupture	1″.3 from neck
Character of broken surface	silky
Elongation of inch sections	″.24, ″.38*, ″.16

TABULATION OF TENSION SPECIMENS FROM STEEL FOR RECEIVERS OF RIFLES (LENGTH OF STEMS 3″).

No. of test.	Marks.	Diameter.	Sectional area.	Elastic limit per square inch.	Tensile strength per square inch.	Elongation in 3 inches.	Contraction of area.	Appearance of fracture.	Elongation of inch sections.	Remarks.
		Inch.	*Sq. inch.*	*Pounds.*	*Pounds.*	*Per cent.*	*Per cent.*		″ ″ ″	
6443	R E	.505	.20	48,000	76,100	28.0	49.1	Fine silky	.21, .44*, .19	From end of bar.
6444	R M	.505	.20	45,000	74,900	27.0	49.1	do	.20, .43*, .18	From middle of bar.
6445	R F 1	.505	.20	39,000	73,050	26.3	46.2	do	.17, .42*, .20	From forged receiver after annealing.
6489	R 1	.505	.20	44,000	75,950	27.0	46.2	Silky	.19, .41*, .21	
6524	R R 2	.505	.20	43,000	82,650	25.0	49.1	Fine silky	.18, .40*, .17	
6525	R R 3	.505	.20	40,000	73,900	27.7	51.9	do	.18, .45*, .20	
6642	R R 4	.505	.20	48,000	75,950	27.7	51.9	do	.21, .44*, .18	
6750	A	.505	.20	32,000	56,550	35.0	66.9	Silky, cup shaped		From forging.
6751	C	.505	.20	44,000	74,050	28.3	57.2	do	.19, .45*, .21	Do.
6752	D	.505	.20	39,000	75,300	26.3	46.2	Silky	.19, .40*, .20	Do.
6897	R R 5	.505	.20	40,000	71,950	26.0	49.1	do	.24, .38*, .16	Do.

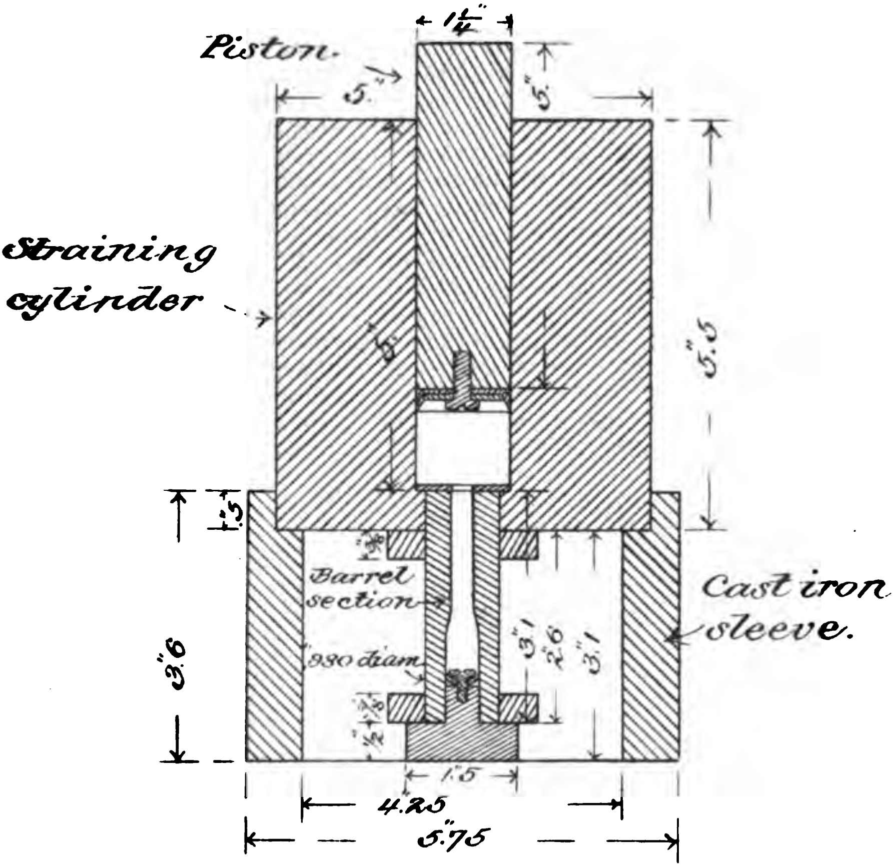
HYDROSTATIC TESTS

OF

SECTIONS FROM BREECH OF .30 CALIBER RIFLE BARRELS.

Rifle Barrels, 30 caliber.

Attachment for straining breech sections with hydrostatic pressure.



HYDROSTATIC TESTS OF RIFLE BARRELS.

Two series of tests on sections from the breech ends of .30 caliber barrels by hydrostatic pressure are herewith reported.

The first is a series of bars of experimental barrel steel marked H and L, respectively. The second comprised the tests of 24 barrels made from steel in regular use, there being 6 barrels in a neutral state, also 6 each which had been treated after machine finishing by heating and quenching with oil at the bore from temperatures of 850°, 1,000°, and 1,250°, respectively. Of these latter barrels, one-half the number had been subjected to the further treatment of firing 500 rounds rapidly with service cartridges.

The attachment for straining these breech sections is shown by the accompanying diagram, consisting of a straining cylinder and its piston mounted over the barrel section on a cast-iron sleeve.

Reinforcing rings three-eighths inch long were used on the section under test, leaving an unsupported section of the test piece 1".85 long. Pressures were applied and the expansion in diameter of the test piece measured at intervals until a maximum stress of 61,120 pounds per square inch was reached, when the tests were discontinued.

The elastic limits of the several barrels was in the vicinity of 36,000 to 40,000 pounds per square inch, excepting those barrels which had been quenched from the temperature of 1,250° F., where higher elastic limits prevailed. Quenching from this temperature produced hardness in a marked degree in a number of the barrels, and one barrel burst while under the maximum pressure—61,120 pounds per square inch.

Tensile tests, representing the metal used in these experiments, follow the details and diagrams of the hydrostatic tests.

No. 9806.

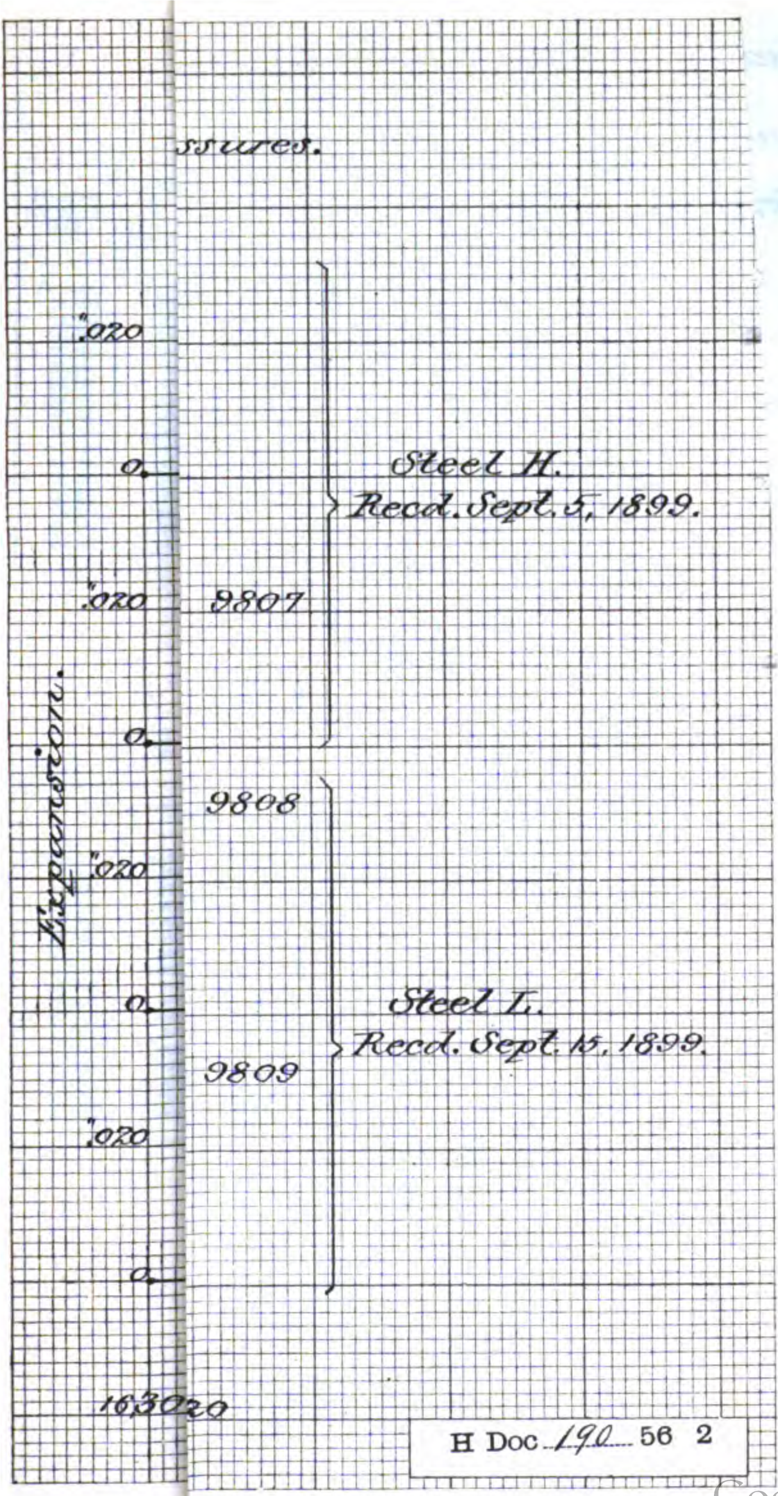
SECTION MARKED H.

Pressure per square inch.	Barrel section.		Remarks.
	Diameter.	Expansion.	
Pounds.	*Inches.*	*Inch.*	
16,300	.980	.000	
24,450	.980+	.000+	
28,520	.980¼	.000¼	
32,600	.981−	.001−	
34,640	.981	.001	
36,670	.981+	.001+	
38,710	.982	.002	
40,750	.987+	.007+	
16,300	.987−	.007−	
42,790	.989	.009	
44,820	.991+	.011+	
48,900	.996	.016	
52,970	1.000	.020	
57,050	1.006+	.026+	
61,120	....	....	Applied, but not measured at the time.
16,300	1.015	....	

No. 9807.

SECTION MARKED H.

Pressure per square inch.	Barrel section.		Remarks.
	Diameter.	Expansion.	
Pounds.	*Inches.*	*Inch.*	
16,300	.979¾	....	
24,450	.979¾+	.000+	
28,520	.980−	.000¼−	
32,600	.980	.000¼	
34,640	.980	.000¼	
36,670	.980+	.000¼+	
38,710	.980+	.000¼+	
40,750	.980¾	.001	
16,300	.980−	.000¼−	
42,790	.981¾	.002	
44,820	.986	.006¼	
46,860	.988	.008¼	
48,900	.990	.010¼	
52,970	.994	.014¼	
57,050	.997	.017¼	
61,120	1.001+	.021¼+	
16,300	1.000−	.020¼−	


ssures.
".020
0
Steel H.
Recd. Sept. 5, 1899.
".020
9807
0
9808
".020
Expansion.
0
Steel L.
Recd. Sept. 15, 1899.
9809
".020
0
163020

H Doc 190 56 2

No. 9808.

SECTION MARKED L.

Pressure per square inch.	Barrel section.		Remarks.
	Diameter.	Expansion.	
Pounds.	*Inches.*	*Inch.*	
16,800	.980	....	
24,450	.980	.000	
28,520	.980+	.000+	
32,600	.980+	.000+	
34,640	.980+	.000+	
36,670	.980½	.000½	
38,710	.981	.001	
40,750	.986	.006	
16,800	.985	.005	
42,790	.988½	.008½	
44,820	.990½	.010½	
48,900	.995	.015	
52,970	.998½	.018½	
57,050	1.004	.024	
61,120	1.010½	.030½	
16,300	1.009	.029	

No. 9809.

SECTION MARKED L.

Pressure per square inch.	Barrel section.		Remarks.
	Diameter.	Expansion.	
Pounds.	*Inches.*	*Inch.*	
16,800	.979½	....	
24,450	.979½	.000	
28,520	.979½	.000	
32,600	.980—	.000½—	
34,640	.980	.000½	
36,670	.980+	.000½+	
38,710	.981	.001½	
40,750	.986+	.006½+	
16,300	.986	.006½	
42,790	.988½	.009	
44,820	.990	.010½	
48,900	.994	.014½	
52,970	.997½	.018	
57,050	1.003—	.023½	
61,120	1.010½	.031	
16,800	1.009	.029½	

No. 9810.

SECTION MARKED NEUTRAL 11-1.

Pressure per square inch.	Barrel section.		Remarks.
	Diameter.	Expansion.	
Pounds.	*Inches.*	*Inch.*	
16,300	.979¼	....	
24,450	.980 −	.000¾ −	
28,520	.980 −	.000¾ −	
32,600	.980	.000¾	
34,640	.980	.000¾	
36,670	.980 +	.000¾ +	
38,710	.983	.003¾	
40,750	.985¼	.006	
16,300	.985	.005¾	
42,790	.987¼	.008	
44,820	.989¼	.010	
46,860	.991	.011¾	
48,900	.992¼	.013	
52,970	.997	.017¾	
57,050	1.001 +	.021¾ +	
61,120	1.007	.027¾	
16,300	1.005 +	.025¾ +	

No. 9811.

SECTION MARKED NEUTRAL 11-2.

Pressure per square inch.	Barrel section.		Remarks.
	Diameter.	Expansion.	
Pounds.	*Inches.*	*Inch.*	
16,300	.979¼	....	
24,450	.979¼	.000	
28,520	.979¼	.000	
32,600	.979¼	.000	
34,640	.980	.000¾	
36,670	.981 −	.001¾ −	
38,710	.982 +	.002¾ +	
40,750	.983¼	.004	
16,300	.983	.003¾	
42,790	.985 +	.005¾ +	
44,820	.987	.007¾	
46,860	.989 −	.009¾ −	
48,900	.990 +	.010¾ +	
52,970	.994 +	.014¾ +	
57,050	.999	.019¾	
61,120	1.005	.025¾	
16,300	1.004	.024¾	

No. 9812.

SECTION MARKED NEUTRAL 11-3.

Pressure per square inch.	Barrel section.		Remarks.
	Diameter.	Expansion.	
Pounds.	*Inches.*	*Inch.*	
16,300	.979	....	
24,450	.979	.000	
28,520	.979+	.000+	
32,600	.979½	.000½	
34,640	.980−	.001−	
36,670	.980+	.001+	
38,710	.981	.002	
40,750	.984	.005	
16,300	.983+	.004+	
42,790	.987+	.008+	
44,820	.990	.011	
46,860	.992	.013	
48,900	.994	.015	
52,970	.999−	.020 -	
57,050	1.004+	.025+	
61,120	1.010	.031	
16,300	1.008+	.029+	

No. 9813.

SECTION MARKED 450-11-1.

Pressure per square inch.	Barrel section.		Remarks.
	Diameter.	Expansion.	
Pounds.	*Inches.*	*Inch.*	
16,300	.979	....	
24,450	.979+	.000+	
28,520	.979+	.000+	
32,600	.980	.001	
34,640	.980+	.001+	
36,670	.984	.005	
38,710	.988	.009	
40,750	.990½	.011½	
16,300	.990	.011	
42,790	.992	.013	
44,820	.994	.015	
46,860	.996+	.017+	
48,900	.999	.020	
52,970	1.004+	.025+	
57,050	1.014½	.035½	
61,120	1.023	.044	
16,300	1.022	.043	

No. 9814.

SECTION MARKED 450-11-2.

Pressure per square inch.	Barrel section.		Remarks.
	Diameter.	Expansion.	
Pounds.	*Inches.*	*Inch.*	
16,300	.979½	....	
24,450	.979½	.000	
28,520	.980−	.000½−	
32,600	.980	.000½	
34,640	.980	.000½	
36,670	.980½	.001	
38,710	.981½	.002	
40,750	.984+	.004½+	
16,300	.984−	.004½−	
42,790	.987	.007½	
44,820	.989+	.009½+	
46,860	.991	.011½	
48,900	.993	.013½	
52,970	.997	.017½	
57,050	1.001	.021½	
61,120	1.010	.030½	
16,300	1.008+	.028½+	

No. 9815.

SECTION MARKED 450-11-3.

Pressure per square inch.	Barrel section.		Remarks.
	Diameter.	Expansion.	
Pounds.	*Inches.*	*Inch.*	
16,300	.980	....	
24,450	.980	.000	
28,520	.980+	.000+	
32,600	.980½	.000½	
34,640	.981	.001	
36,670	.982	.002	
38,710	.984	.004	
40,750	.987+	.007+	
16,300	.986+	.006+	
42,790	.989+	.009+	
44,820	.991	.011	
46,860	.993+	.013+	
48,900	.995	.015	
52,970	.999½	.019½	
57,050	1.010	.030	
61,120	1.013½	.033½	
16,300	1.012+	.032+	

No. 9816.

SECTION MARKED 538–11–1.

Pressure per square inch.	Barrel section.		Remarks.
	Diameter.	Expansion.	
Pounds.	*Inches.*	*Inch.*	
16,300	.979½	....	
14,450	.979½	.000	
28,520	.980	.000½	
32,600	.980+	.000½+	
34,640	.980+	.000½+	
36,670	.980½	.001	
38,710	.981	.001½	
40,750	.986½	.007	
16,300	.986	.006½	
42,790	.989	.009½	
44,820	.990½	.011	
46,860	.992	.012½	
48,900	.994–	.014½–	
52,970	.998	.018½	
57,050	1.003–	.023½–	
61,120	1.009	.029½	
16,300	1.008–	.028½–	

No. 9817.

SECTION MARKED 538–11–2.

Pressure per square inch.	Barrel section.		Remarks.
	Diameter.	Expansion.	
Pounds.	*Inches.*	*Inch.*	
16,300	.979	....	
24,450	.979	.000	
28,520	.979	.000	
32,600	.979½	.000½	
34,640	.980–	.001–	
36,670	.980	.001	
38,710	.981	.002	
40,750	.982+	.003	
16,300	.981½	.002½	
42,790	.987+	.008+	
44,820	.990½	.011½	
46,860	.993–	.014–	
48,900	.995	.016	
52,970	.999	.020	
57,050	1.004½	.025½	
61,120	....	....	Applied but not measured at the time.
16,300	1.009½	.030½	

No. 9818.

SECTION MARKED 538-11-3.

Pressure per square inch.	Barrel section.		Remarks.
	Diameter.	Expansion.	
Pounds.	*Inches.*	*Inch.*	
16,300	.979½	....	
24,450	.979½	.000	
28,520	.980−	.000½−	
32,600	.980	.000½	
34,640	.980+	.000½+	
36,670	.980½	.001	
38,710	.981	.001½	
40,750	.983+	.003½+	
16,300	.982+	.002½+	
42,790	.990+	.010½+	
44,820	.992	.012½	
46,860	.993½	.014	
48,900	.995½	.016	
52,970	1.000½	.021	
57,050	1.009	.029½	
61,120	1.014	.034½	
16,300	1.012½	.033	

No. 9819.

SECTION MARKED 677-11-1.

Pressure per square inch.	Barrel section.		Remarks.
	Diameter.	Expansion.	
Pounds.	*Inch.*	*Inch.*	
16,300	.980	....	
24,450	.980	.000	
28,520	.980	.000	The metal at and near the bore was very hard; a lathe tool would not cut it.
32,600	.980	.000	This part of the cross section of the barrel was ground with an emery wheel to face off the end surface of the specimen.
34,640	.980+	.000+	
36,670	.980+	.000+	
38,710	.980+	.000+	
40,750	.980+	.000+	
16,300	.980	.000	
42,790	.980½	.000½	
44,820	.980½	.000½	
46,860	.980½	.000½	
48,900	.981−	.001−	
52,970	.981−	.001−	
57,050	.981	.001	
61,120	....	....	The barrel burst.

Rupture occurred along two longitudinal lines, about 100 degrees apart, which were connected by a transverse fracture at the forward end of the threaded section over the breech end of the barrel.

No. 9820.

SECTION MARKED 677-11-2.

Pressure per square inch.	Barrel section.		Remarks.
	Diameter.	Expansion.	
Pounds.	*Inch.*	*Inch.*	
16,300	.979¼	....	
24,450	.979¼	.000	
28,520	.979¼	.000	
32,600	.980−	.000¾−	
34,640	.980	.000¾	
36,670	.980+	.000¾+	
38,710	.980+	.000¾+	
40,750	.980¼	.001	
16,300	.980−	.000¾−	
42,790	.981−	.001¾−	
44,820	.981	.001¾	
46,860	.981	.001¾	
48,900	.982	.002¾	
52,970	.986¼	.007	
57,050	.990	.010¾	
61,120	....	....	Applied, but not measured at the time.
16,300	.993	.013¾	

No. 9821.

SECTION MARKED 677-11-3.

Pressure per square inch.	Barrel section.		Remarks.
	Diameter.	Expansion.	
Pounds.	*Inch.*	*Inch.*	
16,300	.980¼	....	
24,450	.980¼	.000	Hardened metal at the bore of this barrel.
28,520	.980¼	.000	
32,600	.981−	.000¾−	
34,640	.981−	.000¾−	
36,670	.981−	.000¾−	
38,710	.981−	.000¾−	
40,750	.981	.000¾	
16,300	.980+	−.000¼	
42,790	.981	.000¾	
44,820	.981	.000¾	
46,860	.981	.000¾	
48,900	.981+	.000¾+	
52,970	.982−	.001¾−	
57,050	.983	.002¾	
61,120	.984+	.003¾+	
16,300	.983¼	.003	

No. 9822.

SECTION MARKED NEUTRAL 11-1-500 RDS.

Pressure per square inch.	Barrel section.		Remarks.
	Diameter.	Expansion.	
Pounds.	*Inches.*	*Inch.*	
16,300	.980	....	
24,450	.980	.000	
28,520	.980	.000	
32,600	.980	.000	
34,640	.980	.000	
36,670	.980½	.000½	
38,710	.982+	.002+	
40,750	.985—	.005—	
16,300	.983½	.003½	
42,790	.986½	.006½	
44,820	.988	.008	
46,860	.989½	.009½	
48,900	.991½	.011½	
52,970	.996	.016	
57,050	1.001+	.021+	
61,120	1.007½	.027½	
16,300	1.006	.026	

No. 9823.

SECTION MARKED NEUTRAL 11-2-500 RDS.

Pressure per square inch.	Barrel section.		Remarks.
	Diameter.	Expansion.	
Pounds.	*Inches.*	*Inch.*	
16,300	.980	....	
24,450	.980	.000	
28,520	.980½	.000½	
32,600	.980½	.000½	
34,640	.981—	.001—	
36,670	.981—	.001—	
38,710	.981—	.001—	
40,750	.983—	.003—	
16,300	.982	.002	
42,790	.985	.005	
44,820	.987	.007	
46,860	.988½	.008½	
48,900	.990+	.010+	
52,970	.995	.015	
57,050	.999	.019	
61,120	1.005	.025	
16,300	1.003½	.023½	

No. 9824.

SECTION MARKED NEUTRAL 11-3-500 RDS.

Pressure per square inch.	Barrel section.		Remarks.
	Diameter.	Expansion.	
Pounds.	*Inches.*	*Inch.*	
16,300	.979½	....	
24,450	.979½	.000	
28,520	.980−	.000½−	
32,600	.980+	.000½+	
34,640	.981+	.001½+	
36,670	.984	.004½	
38,710	.986+	.006½+	
40,750	.988	.008½	
16,300	.987+	.007½+	
42,790	.990+	.010½+	
44,820	.992+	.012½+	
46,860	.994½	.015	
48,900	.997	.017½	
52,970	.998½	.019	
57,050	1.010−	.030½−	
61,120	1.019+	.039½+	
16,300	1.018−	.038½−	

No. 9825.

SECTION MARKED 450-11-1-500 RDS.

Pressure per square inch.	Barrel section.		Remarks.
	Diameter.	Expansion.	
Pounds.	*Inches.*	*Inch.*	
16,300	.980	....	
24,450	.980	.000	
28,520	.980+	.000+	
32,600	.980+	.000+	
34,640	.980½	.000½	
36,670	.981	.001	
38,710	.982	.002	
40,750	.990	.010	
16,300	.989	.009	
42,790	.993	.013	
44,820	.995½	.015½	
46,860	.998+	.018+	
48,900	1.001−	.021−	
52,970	1.007	.027	
57,050	1.015+	.035+	
61,120	....	....	Applied, but not measured at the time.
16,300	1.021½	.041½	

No. 9826.

SECTION MARKED 450-11-2-500 RDS.

Pressure per square inch.	Barrel section.		Remarks.
	Diameter.	Expansion.	
Pounds.	*Inches.*	*Inch.*	
16,300	.980	....	
24,450	.980	.000	
28,520	.980	.000	
32,600	.980	.000	
34,640	.980	.000	
36,670	.980	.000	
38,710	.984−	.004−	
40,750	.986½	.006½	
16,300	.986−	.006−	
42,790	.988½	.008½	
44,820	.990½	.010½	
46,860	.993½	.013½	
48,900	.995½	.015½	
52,970	1.001+	.021+	
57,050	1.008	.028	
61,120	1.016+	.036+	
16,300	1.014½	.034½	

No. 9827.

SECTION MARKED 450-11-3-500 RDS.

Pressure per square inch.	Barrel section.		Remarks.
	Diameter.	Expansion.	
Pounds.	*Inches.*	*Inch.*	
16,300	.980	....	
24,450	.980	.000	
28,520	.980+	.000+	
32,600	.981	.001	
34,640	.981½	.001½	
36,670	.982	.002	
38,710	.982+	.002+	
40,750	.983−	.003−	
16,300	.982	.002	
42,790	.983+	.003+	
44,820	.987+	.007+	
46,860	.990	.010	
48,900	.992	.012	
52,970	.996	.016	
57,050	1.000½	.020½	
61,120	1.006	.026	
16,300	1.004½	.024½	

No. 9828.

SECTION MARKED 538-11-1-500 RDS.

Pressure per square inch.	Barrel section.		Remarks.
	Diameter.	Expansion.	
Pounds.	*Inches.*	*Inch.*	
16,300	.980	....	
24,450	.980	.000	
28,520	.980	.000	
32,600	.980	.000	
34,640	.980+	.000+	
36,670	.980¼	.000¼	
38,710	.981−	.001−	
40,750	.982½	.002½	
16,300	.982	.002	
42,790	.989	.009	
44,820	.991½	.011½	
46,860	.993½	.013½	
48,900	.996	.016	
52,970	1.001+	.021+	
57,050	1.008½	.028½	
61,120	....	....	Applied but not measured at the time.
16,300	1.014	.034	

No. 9829.

SECTION MARKED 538-11-2-500 RDS.

Pressure per square inch.	Barrel section.		Remarks.
	Diameter.	Expansion.	
Pounds.	*Inches.*	*Inch.*	
16,300	.978¼	....	
24,450	.978¼	.000	
28,520	.979−	.000¾−	
32,600	.979¼	.001	
34,640	.981−	.002¾−	
36,670	.985	.006¾	
38,710	.989	.010¾	
40,750	.992	.013¾	
16,300	.991	.012¾	
42,790	.995−	.016¾−	
44,820	.997−	.018¾−	
46,860	.999	.020¾	
48,900	1.001¼	.023	
52,970	1.010½	.032	
57,050	1.019	.040¾	
61,120	....	....	Load momentarily reached.
16,300	1.024	.045¾	

No. 9830.

SECTION MARKED 538–11–3–500 RDS.

Pressure per square inch.	Barrel section.		Remarks.
	Diameter.	Expansion.	
Pounds.	*Inches.*	*Inch.*	
16,300	.980	....	
24,450	.980	.000	
28,520	.980	.000	
32,600	.980	.000	
34,640	.980	.000	
36,670	.980+	.000+	
38,710	.984	.004	
40,750	.989	.009	
16,300	.988	.008	
42,790	.991−	.011−	
44,820	.993	.013	
46,860	.995−	.015−	
48,900	.999	.019	
52,970	1.007+	.027+	
57,050	1.011	.031	
61,120	1.022+	.042+	
16,300	1.021+	.041+	

No. 9831.

SECTION MARKED 677–11–1–500 RDS.

Pressure per square inch.	Barrel section.		Remarks.
	Diameter.	Expansion.	
Pounds.	*Inch.*	*Inch.*	
16,300	.980	....	
24,450	.980	.000	
28,520	.980+	.000+	
32,600	.980+	.000+	
34,640	.980+	.000+	
36,670	.980+	.000+	
38,710	.980+	.000+	
40,750	.980+	.000+	
16,300	.980	.000	
42,790	.980+	.000+	
44,820	.980+	.000+	
46,860	.980½	.000½	
48,900	.981	.001	
52,970	.982+	.002+	
57,050	.985−	.005−	
61,120	.986½	.006½	
16,300	.986−	.006−	

No. 9832.

SECTION MARKED 677-11-2-500 RDS.

Pressure per square inch.	Barrel section.		Remarks.
	Diameter.	Expansion.	
Pounds.	*Inch.*	*Inch.*	
16,300	0.980½	0.	
24,450	.980½	.000	
28,520	.981—	.000½—	
32,600	.981	.000½	
34,640	.981	.000½	
36,670	.981	.000½	
38,710	.981	.000½	
40,750	.981+	.000½+	
16,300	.980½	.000	
42,790	.981+	.000½+	
44,820	.981½	.001	
46,860	.981½	.001	
48,900	.982—	.001½—	
52,970	.984—	.003½—	
57,050	.985½	.005	
61,120	.987	.006½	
16,300	.986+	.005½+	

No. 9833.

SECTION MARKED 677-11-3-500 RDS.

Pressure per square inch.	Barrel section.		Remarks.
	Diameter.	Expansion.	
Pounds.	*Inch.*	*Inch.*	
16,300	0.980	0.	
24,450	.980	.000	
28,520	.980	.000	
32,600	.980	.000	
34,640	.980	.000	
36,670	.980	.000	
38,710	.980	.000	
40,750	.980	.000	
16,300	.980	.000	
42,790	.980	.000	
44,820	.980	.000	
46,860	.980½	.000½	
48,900	.981	.001	
52,970	.982½	.002½	
57,050	.984½	.004½	
61,120	.986½	.006½	
16,300	.985½	.005½	

SPECIMENS NOS. 6792 TO 6795, INCLUSIVE, TAKEN OVER POWDER CHAMBER OF BARRELS, REPRESENTING THE MATERIAL IN THE HYDROSTATIC TESTS OF BARREL SECTIONS.

No. 6792.

Marks, Neutral-11.
Sectional area, .25 square inch.
Gauged length, 1″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	0.	0.	....	....	
10,000	.0001	.0001	....	....	
20,000	.0004	.0003	....	....	
30,000	.0009	.0005	....	....	
40,000	.0012	.0003	....	....	
50,000	.0018	.0006	.0003	.0003	
51,000	.0020	.0002	....	....	
52,000	.0020	0.	....	....	
53,000	.0020	0.	....	....	Elastic limit.
54,000	.0023	.0003	....	....	
55,000	.0042	.0019	....	....	
56,000	.0056	.0014	....	....	
57,000	.0061	.0005	....	....	
58,000	.0074	.0013	....	....	
60,000	.0093	.0019	....	....	
64,000	.0130	.0037	....	....	
68,000	.0170	.0040	....	....	
72,000	.0210	.0040	....	....	
76,000	.0260	.0050	....	....	
80,000	.0310	.0050	....	....	
98,400	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	98,400
Elastic limit per square inch of original section	do...	53,000
Elongation per inch after rupture	inch..	.30
Elongation per inch under strain at elastic limit	do...	.0020
Reduction in diameter at point of rupture (exterior)	do...	.1208
Character of broken surface		silky, cup shaped

No. 6793.

Marks, 450–11.
Sectional area, .25 square inch.
Gauged length, 1″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds:	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	0.	0.	....	....	
10,000	.0001	.0001	....	....	
20,000	.0003	.0002	....	....	
30,000	.0006	.0003	....	....	
40,000	.0009	.0003	....	....	
50,000	.0011	.0002	0.	....	
56,000	.0013	.0002	....	....	Elastic limit.
57,000	.0075	.0062	....	....	
58,000	.0110	.0035	....	....	
60,000	.0160	.0050	....	....	
64,000	.0200	.0040	....	....	
68,000	.0250	.0050	....	....	
72,000	.0310	.0060	....	....	
76,000	.0370	.0060	....	....	
80,000	.0455	.0085	....	....	
94,160	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	94,160
Elastic limit per square inch of original section	do...	56,000
Elongation per inch after rupture	inch..	.31
Elongation per inch under strain at elastic limit	do...	.0013
Reduction in diameter at point of rupture (exterior)	do...	.1308
Character of broken surface		silky, cup shaped

No. 6794.

Marks, 538–11.
Sectional area, .25 square inch.
Gauged length, 1″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.0001	.0001	....	....	
10,000	.0003	.0002	....	....	
20,000	.0006	.0003	....	....	
30,000	.0009	.0003	....	....	
40,000	.0012	.0003	....	....	
50,000	.0017	.0005	.0001	.0001	
60,000	.0020	.0003	....	....	
61,000	.0021	.0001	....	....	Elastic limit.
62,000	.0065	.0044	....	....	
63,000	.0085	.0020	....	....	
64,000	.0105	.0020	....	....	
68,000	.0140	.0035	....	....	
72,000	.0175	.0035	....	....	
76,000	.0210	.0035	....	....	
80,000	.0255	.0045	....	....	
84,000	.0300	.0045	....	....	
88,000	.0360	.0060	....	....	
92,000	.0430	.0070	....	....	
105,600	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	105,600
Elastic limit per square inch of original section	do...	61,000
Elongation per inch after rupture	inch..	.27
Elongation per inch under strain at elastic limit	do...	.0021
Reduction in diameter at point of rupture (exterior)	do...	.1308
Character of broken surface		silky, cup shaped

No. 6795.

Marks, 677-11.
Sectional area, .25 square inch.
Gauged length, 1″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	0.	0.	0.	....	
10,000	.0002	.0002	....	....	
20,000	.0004	.0002	....	....	
30,000	.0008	.0004	....	....	
40,000	.0011	.0003	....	....	
50,000	.0013	.0002	....	....	
60,000	.0017	.0004	....	....	
70,000	.0020	.0003	....	....	
78,000	.0022	.0002	....	....	
79,000	.0023	.0001	....	....	Elastic limit.
80,000	.0050	.0027	....	....	
81,000	.0060	.0010	....	....	
82,000	.0071	.0011	....	....	
84,000	.0100	.0029	....	....	
88,000	.0125	.0025	....	....	
92,000	.0151	.0026	....	....	
96,000	.0180	.0029	....	....	
100,000	.0220	.0040	....	....	
124,720	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	124,720
Elastic limit per square inch of original section	do...	79,000
Elongation per inch after rupture	inch..	.21
Elongation per inch under strain at elastic limit	do...	.0023
Reduction in diameter at point of rupture (exterior)	do...	.1006
Character of broken surface		silky, cup shaped

BOLT STEEL FOR .30 CALIBER RIFLE BARRELS.

No. 6813

Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000333	.000233	....	....	
20,000	.000700	.000367	....	....	
30,000	.001067	.000367	0.	....	
40,000	.001433	.000366	0.	....	
50,000	.001800	.000367	....	....	
56,000	.001967	.000167	....	....	
57,000	.002033	.000066	....	....	Elastic limit.
58,000	.010000	.007967	....	....	
59,000	.010233	.000233	....	....	
60,000	.010600	.000367	....	....	
62,000	.011333	.000733	....	....	
64,000	.012667	.001334	....	....	
68,000	.015333	.002666	....	....	
72,000	.018500	.003167	....	....	
76,000	.021167	.002667	....	....	
80,000	.024333	.003166	....	....	
84,000	.028000	.003667	....	....	
88,000	.036000	.008000	....	....	
108,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	108,000
Elastic limit per square inch of original section	do...	57,000
Elongation per inch after rupture	inch..	.1400
Elongation per inch under strain at elastic limit	do...	.002033
Reduction in diameter at point of rupture	do...	.085
Reduction in area after rupture, per cent of original section		30.7
Position of rupture		″.8 from neck
Character of broken surface		granular at circumference 60 per cent, silky center 40 per cent
Elongation of inch sections		″.22*, ″.13, ″.07

TENSION TESTS OF RECEIVERS OF .30 CALIBER RIFLE BARRELS.

No. of test.	Marks.	Tensile strength.
		Pounds.
9834	Regular stock	20,900
9835	do	35,280
9836	do	25,340
9837	Special A	19,850
9838	do	30,300
9839	do	31,710
9840	Special C	15,700
9841	do	26,490
9842	do	25,780
9843	Special D	20,300
9844	do	27,400
9845	do	24,980

The first test of each group of receivers was made by an attachment in the testing machine, in which the forward end of the sample was secured by means of a threaded plug occupying the place of the breech end of the barrel. A key in a yoke passed diametrically through the central part of the receiver and took a bearing on the receiver at the two different levels abreast the rear of the magazine. In each of these tests the receiver fractured at the key seat.

An additional yoke was made by means of which the stress on the key seat was in part relieved by pulling simultaneously against the forward end of the lower part of the receiver.

The second and third tests of each group of receivers were made with this modified attachment.

The fractures were now at the end of the threaded section in whole, or at this place in part and abreast the rear of the magazine in part. The fractures throughout were fine granular, with a silvery luster.

STEEL FOR PRESSURE BARRELS.

No. 6753.

Marks, S P.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.001000	.000367	....	....	
40,000	.001333	.000333	....	....	
50,000	.001667	.000334	....	....	
60,000	.002000	.000333	0.	....	
63,000	.002100	.000100	....	....	
64,000	.002133	.000033	....	....	Elastic limit.
65,000	.010833	.008700	....	....	
66,000	.011167	.000334	....	....	
67,000	.011433	.000266	....	....	
68,000	.012000	.000567	....	....	
72,000	.015833	.003833	....	....	
76,000	.018500	.002667	....	....	
80,000	.022600	.004100	....	....	
84,000	.026167	.003567	....	....	
88,000	.031333	.005166	....	....	
92,000	.036667	.005334	....	....	
96,000	.043667	.007000	....	....	
100,000	.050667	.007000	....	....	
109,150	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	**pounds**	**109,150**
Elastic limit per square inch of original section	**do**	**64,000**
Elongation per inch after rupture	**inch**	**.2000**
Elongation per inch under strain at elastic limit	**do**	**.002133**
Reduction in diameter at point of rupture	**do**	**.135**
Reduction in area after rupture, per cent of original section		**46.2**
Position of rupture		**1″.5 from neck**
Character of broken surface		**fine silky**
Elongation of inch sections		**″.12, ″.33*, ″.15**

CASE-HARDENING EXPERIMENTS WITH STEEL BARS.

CASE-HARDENING EXPERIMENTS.

Case-hardening experiments were made with steel containing in the original bars the following percentages of carbon: .16, .34, .55, .73, .82, and 1.09, as shown by the distinguishing marks on the specimens.

In the additional marks the letter T stands for temperature of the case-hardening furnace, N for normal, L for low, and E for exposure; P for prolonged.

The normal temperatures ranged from 730° C. to 920° C.; low temperatures from 740° C. to 840° C.

The time of exposure to heat in the furnace was three hours for the normal time and four hours for prolonged.

There were specimens which were merely heated to the temperature of the furnace, being packed in lime at the time, and not case-hardened nor quenched in oil, as done with the others of the treated bars. The treatment of the bars was done at the Springfield Armory.

There were specimens with both solid and hollow stems, having sectional areas of one-fourth and one-fifth square inch respectively. The stems were 3 inches long each.

Elongations under stress were measured between reference points established on the heads of the specimens, this being done to avoid disturbance of the metal in the stem by marks necessary to define the limits of the gauged length.

The results are, therefore, not reduced to elongations per linear inch. The elastic limits of the case-hardened bars were less sharply defined than the original bars.

Following the tension tests, specimens were annealed to permit turning down in the lathe, and chips for carbon by color determinations turned off the stems.

With the first two specimens the determinations were with chips taken each thirty-second of an inch in depth; in the remaining cases the chips were taken each one hundredth of an inch in depth.

The results were reported as follows:

Marks.	Chips, depth from surface.	Carbon by color.
	Inch.	
.16 C TN EP	First 32d	.215
	Second 32d	.150
	Third 32d	.140
	Fourth 32d	.140
	Fifth 32d	.142
	Sixth 32d	.140
	Seventh 32d	.140
.16 C TL EP	First 32d	.260
	Second 32d	.125
	Third 32d	.125
	Fourth 32d	.120
	Fifth 32d	.120
	Sixth 32d	.120
	Seventh 32d	.120
.16 C TN EN	First 100th	.12
	Second 100th	.12
	Third 100th	.12
	Fourth 100th	.12
	Fifth 100th	.12
.16 C TL EN	First 100th	.22
	Second 100th	.19
	Third 100th	.15
	Fourth 100th	.14
	Fifth 100th	.14
.16 C TL EP	First 100th	.29
	Second 100th	.28
	Third 100th	.20
	Fourth 100th	.15
	Fifth 100th	.15
.34 C TN EN	First 100th	.34
	Second 100th	.33
	Third 100th	.33
	Fourth 100th	.33
	Fifth 100th	.33
.34 C TN EP	First 100th	.60
	Second 100th	.45
	Third 100th	.45
	Fourth 100th	.45
	Fifth 100th	.43
.34 C TL EN	First 100th	.50
	Second 100th	.45
	Third 100th	.40
	Fourth 100th	.40
	Fifth 100th	.40
.34 C TL EP	First 100th	.60
	Second 100th	.48
	Third 100th	.48
	Fourth 100th	.40
	Fifth 100th	.40
.55 C TN EN	First 100th	.78
	Second 100th	.78
	Third 100th	.76
	Fourth 100th	.71
	Fifth 100th	.70
.73 C TN EN	First 100th	.94
	Second 100th	.92
	Third 100th	.84
	Fourth 100th	.84
	Fifth 100th	.83
.82 C TN EN	First 100th	1.10
	Second 100th	1.00
	Third 100th	1.00
	Fourth 100th	.96
	Fifth 100th	.95
1.03 C TN EN	First 100th	1.14
	Second 100th	1.13
	Third 100th	1.13
	Fourth 100th	1.13
	Fifth 100th	1.13

TENSION TESTS.

No. 7041.

Steel in natural state, turned down from hot rolled bar.
Marks, .16 C.
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0004	.0004	0.	
10,000	.0013	.0009	....	
20,000	.0028	.0015	0.	
30,000	.0039	.0011	....	
40,000	.0052	.0013	0.	
43,200	.0057	.0005	....	Elastic limit.
44,000	.1130	.1073	....	
45,000	.1200	.0070	....	
46,000	.14	.02	....	
48,000	.18	.04	....	
50,000	.20	.02	....	
52,000	.25	.05	....	
56,000	.37	.12	....	
58,840	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	58,840
Elastic limit per square inch of original section	do...	43,200
Elongation after rupture	inch..	1.04
Elongation under strain at elastic limit	do...	.0057
Reduction in diameter at point of rupture	do...	.224
Reduction in area after rupture, per cent of original section		63.7
Position of rupture		1″.75 from neck
Character of broken surface		fine silky

No. 7042.

Steel in natural state turned down from hot rolled bar.
Marks, .16 C.
Diameter, ".564.
Sectional area, .25 square inch.
Gauged length on heads, 4".

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0004	.0004	0.	
10,000	.0013	.0009	....	
20,000	.0027	.0014	....	
30,000	.0040	.0013	0.	
39,000	.0054	.0014	....	
40,000	.0058	.0004	.0001	
46,000	.0064	.0006	....	Elastic limit.
47,000	.1290	.1226	....	
48,000	.1400	.0110	....	
49,000	.1480	.0080	....	
50,000	.1650	.0170	....	
52,000	.20	.0350	....	
56,000	.30	.10	....	
60,000	.50	.20	....	
60,960	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section....pounds..	60,960
Elastic limit per square inch of original section....do...	46,000
Elongation after rupture....inch..	1.14
Elongation under strain at elastic limit....do...	.0064
Reduction in diameter at point of rupture....do...	.234
Reduction in area after rupture, per cent of original section....	65.8
Position of rupture....	1".58 from neck
Character of broken surface....	fine silky
Elongation of inch sections on stem....	".32, ".54*, ".23

No. 7043.

Steel in natural state, turned down from hot rolled bar.
Marks, .16 C.
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0008	.0008	0.	
10,000	.0017	.0009	....	
20,000	.0031	.0014	....	
30,000	.0048	.0017	.0001	
40,000	.0059	.0011	....	
45,000	.0066	.0007	....	Elastic limit.
46,000	.1200	.1134	....	
47,000	.1280	.0080	....	
48,000	.1420	.0140	....	
50,000	.1690	.0270	....	
60,720	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	60,720
Elastic limit per square inch of original section	do...	45,000
Elongation after rupture	inch..	1.02
Elongation under strain at elastic limit	do...	.0066
Reduction in diameter at point of rupture	do...	.234
Reduction in area after rupture, per cent of original section		65.8
Position of rupture		1″.53 from neck
Character of broken surface		fine silky
Elongation of inch sections on stem		″.28, ″.49*, ″.21

No. 7056.

Heated in lime, not case hardened.
Marks, $\frac{.16\ C}{TN\ EN}$
Diameter, ".564.
Sectional area, .25 square inch.
Gauged length on heads, 4".

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0004	.0004	0.	
10,000	.0010	.0006	....	
20,000	.0022	.0012	....	
30,000	.0035	.0013	0.	
40,000	.0048	.0013	0.	Elastic limit.
41,000	.1210	.1162	....	
42,000	.1400	.0190	....	
44,000	.17	.03	....	
46,000	.20	.03	....	
48,000	.25	.05	....	
50,000	.30	.05	....	
55,000	.58	.28	....	
55,200	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section....pounds..	55,200
Elastic limit per square inch of original section....do...	40,000
Elongation after rupture....inch..	1.11
Elongation under strain at elastic limit....do...	.0048
Reduction in diameter at point of rupture....do...	.214
Reduction in area after rupture, per cent of original section....	61.5
Position of rupture....	1".6 from neck
Character of broken surface....	silky
Elongation of inch sections on stem....	".37, ".48*, ".23

No. 7057.

Heated in lime, not case hardened.
Marks, $\overset{.16\ \mathrm{C}}{\mathrm{TN\ EN}}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0003	.0003	0.	
10,000	.0010	.0007	....	
20,000	.0022	.0012	....	
30,000	.0035	.0013	0.	
38,000	.0047	.0012	....	
39,000	.0049	.0002	....	Elastic limit.
40,000	.1130	.1081	....	
41,000	.1230	.0100	....	
42,000	.1370	.0140	....	
44,000	.17	.0330	....	
46,000	.20	.03	....	
48,000	.25	.05	....	
50,000	.29	.04	....	
55,000	.60	.31	....	
55,280	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	55,280
Elastic limit per square inch of original section	do...	39,000
Elongation after rupture	inch..	1.10
Elongation under strain at elastic limit	do...	.0049
Reduction in diameter at point of rupture	do...	.224
Reduction in area after rupture, per cent of original section		63.7
Position of rupture		at middle of stem
Character of broken surface		fine silky, cup shaped
Elongation of inch sections on stem		″.25, ″.59*, ″.24

No. 7058.

Heated in lime, not case hardened.
Marks, $\overset{.16\ C}{\text{TN EN}}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged lengh.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0004	.0004	0.	
10,000	.0012	.0008	....	
20,000	.0027	.0015	....	
30,000	.0040	.0013	0.	
38,000	.0050	.0010	....	Elastic limit.
39,000	.1090	.1040	....	
40,000	.1210	.0120	....	
42,000	.15	.0290	....	
44,000	.18	.03	....	
46,000	.21	.03	....	
48,000	.26	.05	....	
50,000	.31	.05	....	
54,880	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	54,880
Elastic limit per square inch of original section ....do...	38,000
Elongation after rupture ....inch..	1.10
Elongation under strain at elastic limit ....do...	.0050
Reduction in diameter at point of rupture ....do...	.214
Reduction in area after rupture, per cent of original section	61.5
Position of rupture	1″.8 from neck
Character of broken surface	fine silky, cup shaped
Elongation of inch sections on stem	″.24, ″.59*, ″.24

No. 7059.

Heated in lime, not case hardened.
Marks, $\overset{.16\ C}{\text{TL EN}}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0005	.0005	0.	
10,000	.0011	.0006	....	
20,000	.0025	.0014	....	
30,000	.0039	.0014	0.	
40,000	.0050	.0011	....	
43,000	.0054	.0004	....	Elastic limit.
44,000	.1550	.1496	....	
45,000	.1630	.0080	....	
46,000	.1800	.0170	....	
48,000	.24	.06	....	
50,000	.29	.05	....	
55,000	.53	.24	....	
55,600	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	55,600
Elastic limit per square inch of original section	do...	43,000
Elongation after rupture	inch..	1.09
Elongation under strain at elastic limit	do...	.0054
Reduction in diameter at point of rupture	do...	.214
Reduction in area after rupture, per cent of original section		61.5
Position of rupture		at middle of the stem
Character of broken surface		fine silky, cup shaped
Elongation of inch sections on stem		″.24, ″.59*, ″.28

No. 7060.

Heated in lime, not case hardened.
Marks, $\overset{.16\ \mathrm{C}}{\mathrm{TL\ EN}}$.
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0004	.0004	0.	
10,000	.0011	.0007	....	
20,000	.0024	.0013	....	
30,000	.0039	.0015	0.	
40,000	.0051	.0012	....	Elastic limit.
	.1060	.1009	....	
41,000	.1160	.0100	....	
42,000	.1290	.0130	....	
44,000	.17	.0410	....	
46,000	.20	.03	....	
48,000	.24	.04	....	
50,000	.28	.04	....	
55,000	.54	.26	....	
55,200	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	55,200
Elastic limit per square inch of original section	do	40,000
Elongation after rupture	inch	1.09
Elongation under strain at elastic limit	do	.0051
Reduction in diameter at point of rupture	do	.224
Reduction in area after rupture, per cent of original section		63.7
Position of rupture		at middle of stem
Character of broken surface		fine silky, cup shaped
Elongation of inch sections on stem		″.24, ″.60*, ″.22

No. 7061.

Heated in lime, not case hardened.
Marks, $\overset{.16}{\text{TL}}\ \overset{\text{C}}{\text{EN}}$.
Diameter, ".564.
Sectional area, .25 square inch.
Gauged length on heads, 4".

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0004	.0004	0.	
10,000	.0010	.0006	....	
20,000	.0022	.0012	....	
30,000	.0036	.0014	0.	
40,000	.0049	.0013	....	
43,000	{ .0051	.0002	....	Elastic limit.
	.1355	.1304	....	
44,000	.1530	.0175	....	
46,000	.19	.0370	....	
48,000	.24	.05	....	
50,000	.29	.05	....	
55,000	.57	.28	....	
55,240	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	55,240
Elastic limit per square inch of original section	do...	43,000
Elongation after rupture	inch..	1.09
Elongation under strain at elastic limit	do...	.0051
Reduction in diameter at point of rupture	do...	.234
Reduction in area after rupture, per cent of original section		65.8
Position of rupture		at middle of stem
Character of broken surface		fine silky, cup shaped
Elongation of inch sections on stem		".24, ".59*, ".28

No. 7090.

Marks, $\overset{.16\ C}{\text{TN EN}}$
Diameter, ".564.
Sectional area, .25 square inch.
Gauged length on heads, 4".

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0002	.0002	....	
10,000	.0009	.0007	....	
20,000	.0020	.0011	....	
30,000	.0031	.0011	0.	
40,000	.0047	.0016	.0001	
48,000	....	....	....	Elastic limit (approximate).
50,000	.0071	.0024	.0009	
51,000	.0080	.0009	....	
52,000	.0140	.0060	....	
54,000	.0270	.0130	....	
56,000	.0315	.0045	....	
60,000	.0515	.0200	....	
65,000	.08	.0285	....	
70,000	.12	.04	....	
80,000	.27	.15	....	
83,720	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds.. 83,720
Elastic limit per square inch of original section (approximate) ....do... 48,000
Elongation after rupture..inch.. .69
Reduction in diameter at point of rupture...do... .164
Reduction in area after rupture, per cent of original section................................ 49.7
Position of rupture .... ".5 from neck
Character of broken surface .... silky; opened cracks in surface of stem

No. 7091.

Marks, .16 C TN EN
Diameter, ".564.
Sectional area, .25 square inch.
Gauged length on heads, 4".

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0003	.0003	0.	
10,000	.0010	.0007	....	
20,000	.0023	.0013	....	
30,000	.0036	.0013	.0001	
40,000	.0049	.0013	.0001	
50,000	.0064	.0015	....	
54,000	.0070	.0006	....	
55,000	.0072	.0002	....	Elastic limit.
56,000	.0220	.0148	....	
58,000	.0420	.0200	....	
60,000	.0490	.0070	....	
65,000	.08	.0310	....	
70,000	.12	.04	....	
75,000	.19	.07	....	
80,000	.34	.15	....	
81,680	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	81,680
Elastic limit per square inch of original section	do...	55,000
Elongation after rupture	inch..	.65
Elongation under strain at elastic limit	do...	.0072
Reduction in diameter at point of rupture	do...	.174
Reduction in area after rupture, per cent of original section		52.2
Position of rupture		".6 from neck
Character of broken surface		silky; opened minute cracks in stem

No. 7092.

Marks, $\overset{.16}{\mathrm{TN}}\ \overset{\mathrm{C}}{\mathrm{EN}}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0007	.0007	0.	
10,000	.0016	.0009	....	
20,000	.0031	.0015	....	
30,000	.0048	.0017	.0002	
40,000	.0060	.0012	.0006	
48,000	.0068	.0008	....	
49,000	.0070	.0002	....	Elastic limit.
50,000	.0080	.0010	.0018	
51,000	.0091	.0011	....	
52,000	.0131	.0040	....	
54,000	.0240	.0109	....	
56,000	.0285	.0045	....	
60,000	.0470	.0185	....	
65,000	.08	.0330	....	
70,000	.11	.03	....	
75,000	.17	.06	....	
80,000	.23	.06	....	
84,120	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	84,120
Elastic limit per square inch of original section	do...	49,000
Elongation after rupture	inch..	.63
Elongation under strain at elastic limit	do...	.0070
Reduction in diameter at point of rupture	do...	.174
Reduction in area after rupture, per cent of original section		52.2
Position of rupture		″.75 from neck
Character of broken surface		silky, oblique; opened cracks along the stem

No. 7054.

Marks, $\overset{.16\ \mathrm{C}}{\mathrm{TN\ EP}}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0001	.0001	0.	
10,000	.0008	.0007	....	
20,000	.0020	.0012	....	
30,000	.0033	.0013	....	
40,000	.0048	.0015	....	
44,000	....	....	....	Elastic limit, approximate.
46,000	.0061	.0013	.0006	
48,000	.0070	.0009	....	
50,000	.0104	.0034	....	
52,000	.0170	.0066	....	
54,000	.0240	.0070	....	
56,000	.0320	.0080	....	
60,000	.0485	.0165	....	
65,000	.08	.0315	....	
70,000	.12	.04	....	
80,000	.27	.15	....	
83,680	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	83,680
Elastic limit per square inch of original section (approximate)	do...	44,000
Elongation after rupture	inch..	.67
Reduction in diameter at point of rupture	do...	.144
Reduction in area after rupture, per cent of original section		44.6
Position of rupture		″.40 from neck
Character of broken surface		silky, oblique; opened cracks along surface of stem

No. 7093.

Marks, $\overset{.16\ C}{TN\ EP}$

Diameter, ″.564.

Sectional area, .25 square inch.

Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0001	.0001	0.	
10,000	.0007	.0006	....	
20,000	.0018	.0011	....	
30,000	.0029	.0011	−.0001	
40,000	.0044	.0015	+.0001	
47,000	.0060	.0016	....	Elastic limit.
48,000	.0069	.0009	....	
49,000	.0090	.0021	....	
50,000	.0150	.0060	....	
52,000	.0230	.0080	....	
54,000	.0280	.0050	....	
56,000	.0345	.0065	....	
60,000	.0480	.0135	....	
65,000	.08	.0320	....	
70,000	.12	.04	....	
75,000	.19	.07	....	
80,000	.29	.10	....	
82,680	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	82,680
Elastic limit per square inch of original section	do...	47,000
Elongation after rupture	inch..	.68
Elongation under strain at elastic limit	do...	.0060
Reduction in diameter at point of rupture	do...	.154
Reduction in area after rupture, per cent of original section		47.2
Position of rupture		1″.2 from neck
Character of broken surface		silky, oblique; opened cracks along surface of stem

No. 7094.

Marks, $\overset{.16\text{ C}}{\text{TL EN}}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0008	.0008	0.	
10,000	.0016	.0008	....	
20,000	.0028	.0012	....	
30,000	.0040	.0012	.0001	
40,000	.0055	.0015	.0002	
46,000	....	....	....	Elastic limit, approximate.
50,000	.0078	.0023	.0011	
51,000	.0082	.0004	....	
52,000	.0107	.0025	....	
54,000	.0250	.0143	....	
56,000	.0290	.0040	....	
60,000	.0485	.0195	....	
65,000	.08	.0315	....	
70,000	.12	.04	....	
75,000	.16	.04	....	
80,000	.26	.10	....	
83,600	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	83,600
Elastic limit per square inch of original section (approximate)	do...	46,000
Elongation after rupture	inch..	.68
Reduction in diameter at point of rupture	do...	.184
Reduction in area after rupture, per cent of original section		54.6
Position of rupture		″.6 from neck
Character of broken surface		silky, oblique; opened minute cracks along surface of stem

No. 7095.

Marks, $\overset{.16\ \mathrm{C}}{\mathrm{TL\ EN}}$
Diameter, ".564.
Sectional area, .25 square inch.
Gauged length on heads, 4".

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0007	.0007	0.	
10,000	.0017	.0010	....	
20,000	.0030	.0013	....	
30,000	.0044	.0014	.0001	
40,000	.0059	.0015	.0002	
49,000	.0071	.0012	....	Elastic limit.
50,000	.0079	.0008	....	
52,000	.0090	.0011	....	
54,000	.0160	.0070	....	
56,000	.0335	.0175	....	
60,000	.0540	.0205	....	
65,000	.08	.0260	....	
70,000	.12	.04	....	
75,000	.19	.07	....	
80,000	.30	.11	....	
82,400	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	82,400
Elastic limit per square inch of original section	do...	49,000
Elongation after rupture	inch..	.67
Elongation under strain at elastic limit	do...	.0071
Reduction in diameter at point of rupture	do...	.184
Reduction in area after rupture, per cent of original section		54.6
Position of rupture		".55 from neck
Character of broken surface		silky, oblique; opened cracks along surface of stem

No. 7055.

Marks, $\overset{.16\,C}{TL\,EP}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0009	.0009	0.	
10,000	.0021	.0012	....	
20,000	.0038	.0017	....	
30,000	.0051	.0013	.0004	
37,000	....	....	....	Elastic limit, approximate.
40,000	.0063	.0012	.0009	
42,000	.0070	.0007	....	
44,000	.0077	.0007	....	
46,000	.0087	.0010	....	
48,000	.0113	.0026	....	
50,000	.0195	.0082	....	
55,000	.0360	.0165	....	
60,000	.06	.0240	....	
65,000	.09	.03	....	
70,000	.13	.04	....	
75,000	.20	.07	....	
80,000	.32	.12	....	
82,000	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	82,000
Elastic limit per square inch of original section, approximate	do...	37,000
Elongation after rupture	inch..	.65
Reduction in diameter at point of rupture	do...	.134
Reduction in area after rupture, per cent of original section		41.9
Position of rupture		″.65 from neck
Character of broken surface		silky, oblique; opened cracks along surface of stem

No. 7096.

Marks, $\overset{.16\ \mathrm{C}}{\mathrm{TL\ EP}}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	0.	0.	0.	
10,000	.0008	.0008	....	
20,000	.0016	.0013	....	
30,000	.0030	.0014	....	
40,000	.0042	.0012	.0002	
47,000	.0051	.0009	....	Elastic limit.
48,000	.0060	.0009	....	
49,000	.0080	.0020	....	
50,000	.0110	.0030	....	
52,000	.0190	.0080	....	
54,000	.0250	.0060	....	
56,000	.0320	.0070	....	
60,000	.0510	.0190	....	
65,000	.08	.0290	....	
70,000	.12	.04	....	
75,000	.17	.05	....	
80,000	.29	.12	....	
82,640	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	82,640
Elastic limit per square inch of original section ....do...	47,000
Elongation after rupture ....inch..	.64
Elongation under strain at elastic limit ....do...	.0051
Reduction in diameter at point of rupture ....do...	.174
Reduction in area after rupture, per cent of original section	52.2
Position of rupture	″.6 from neck
Character of broken surface	silky; opened cracks along the surface of stem

No. 7097.

Marks, $\overset{.16\ \mathrm{C}}{\mathrm{TL\ EP}}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0006	.0006	0.	
10,000	.0013	.0007	....	
20,000	.0026	.0013	....	
30,000	.0040	.0014	....	
40,000	.0054	.0014	.0003	
46,000	.0063	.0009	....	Elastic limit.
47,000	.0069	.0006	....	
48,000	.0078	.0009	....	
49,000	.0110	.0032	....	
50,000	.0150	.0040	....	
52,000	.0228	.0078	.0155	
54,000	.0280	.0052	....	
56,000	.0312	.0032	....	
60,000	.0525	.0213	....	
65,000	.07	.0175	....	
70,000	.12	.05	....	
75,000	.18	.06	....	
80,000	.29	.11	....	
82,480	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	82,480
Elastic limit per square inch of original section	do...	46,000
Elongation after rupture	inch..	.65
Elongation under strain at elastic limit	do...	.0063
Reduction in diameter at point of rupture	do...	.164
Reduction in area after rupture, per cent of original section		49.7
Position of rupture		″.5 from neck
Character of broken surface		silky; opened cracks in surface of stem

No. 7029.

Hollow specimen.
Marks, $\overset{.16\ \mathrm{C}}{\mathrm{TN\ EN}}$
Exterior diameter, ″.588.
Interior diameter, ″.300.
Sectional area, .20 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0002	.0002	0.	
10,000	.0012	.0010	....	
20,000	.0029	.0017	0.	
30,000	.0043	.0014	0.	
39,000	.0060	.0017	....	Elastic limit.
40,000	.0076	.0016	.0010	
41,000	.0089	.0013	....	
42,000	.0095	.0006	....	
43,000	.0120	.0025	....	
44,000	.0148	.0028	....	
46,000	.0230	.0082	....	
48,000	.0290	.0060	....	
50,000	.0390	.0100	.0302	
60,000	.12	.0810	....	
70,000	.36	.21	....	
89,000	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	89,000
Elastic limit per square inch of original section (approximate)	do...	39,000
Elongation after rupture	inch..	.51
Elongation under strain at elastic limit	do...	.0060
Reduction in diameter at point of rupture (exterior)	do...	.098
Position of rupture		″.40 from neck
Character of broken surface		silky; opened cracks along the stem

No. 7030.

Hollow specimen.
Marks, .16 C
TN EN
Exterior diameter, ″.588.
Interior diameter, ″.300.
Sectional area, .20 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0004	.0004	0.	
10,000	.0012	.0008	....	
20,000	.0030	.0018	....	
30,000	.0048	.0018	.0001	
49,000	.0070	.0022	....	Elastic limit.
50,000	.0075	.0005	....	
51,000	.0081	.0006	....	
52,000	.0090	.0009	....	
53,000	.0099	.0009	....	
54,000	.0120	.0021	....	
56,000	.0190	.0070	....	
58,000	.0230	.0040	....	
60,000	.0360	.0130	....	
65,000	.05	.0140	....	
70,000	.08	.03	....	
75,000	.11	.03	....	
80,000	.18	.07	....	
85,000	.24	.06	....	
89,100	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	89,100
Elastic limit per square inch of original section	do...	49,000
Elongation after rupture	inch..	.56
Elongation under strain at elastic limit	do...	.0070
Reduction in diameter at point of rupture (exterior)	do...	.098
Position of rupture		″.7 from neck
Character of broken surface		silky; opened cracks along the stem

No. 7031.

Hollow specimen.
Marks, $\overset{.16\text{ C}}{\text{TN EN}}$
Exterior diameter, ″.588.
Interior diameter, ″.300.
Sectional area, .20 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged lengths.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0002	.0002	0.	
10,000	.0010	.0008	....	
20,000	.0020	.0010	....	
30,000	.0033	.0013	0.	
40,000	.0046	.0013	....	
50,000	.0062	.0016	....	
54,000	.0073	.0011	....	Elastic limit.
55,000	.0082	.0009	....	
56,000	.0099	.0017	....	
57,000	.0190	.0091	....	
58,000	.0220	.0030	....	
59,000	.0243	.0023	....	
60,000	.0280	.0037	....	
65,000	.06	.0320	....	
70,000	.10	.04	....	
75,000	.13	.03	....	
80,000	.19	.06	....	
85,000	.29	.10	....	
87,550	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	87,550
Elastic limit per square inch of original section	do...	54,000
Elongation after rupture	inch..	.61
Elongation under strain at elastic limit	do...	.0078
Reduction in diameter at point of rupture (exterior)	do...	.138
Position of rupture		1″.4 from neck
Character of broken surface		silky; opened cracks along surface of stem

No. 7032.

Hollow specimen.
Marks, $\overset{.15\ \text{C}}{\text{TN EP}}$
Exterior diameter, ".588.
Interior diameter, ".300.
Sectional area, .20 square inch.
Gauged length on heads, 4".

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0002	.0002	0.	
10,000	.0009	.0007	....	
20,000	.0020	.0011	....	
30,000	.0032	.0012	0.	
40,000	.0049	.0017	....	
49,000	.0063	.0014	....	Elastic limit.
50,000	.0076	.0013	....	
51,000	.0082	.0006	....	
52,000	.0088	.0006	....	
53,000	.0091	.0003	....	
54,000	.0096	.0005	....	
55,000	.0103	.0007	....	
56,000	.0111	.0008	....	
58,000	.0140	.0029	....	
60,000	.0170	.0030	....	
65,000	.03	.0130	....	
70,000	.04	.01	....	
75,000	.07	.03	....	
80,000	.10	.03	....	
85,000	.14	.04	....	
90,000	.20	.06	....	
96,000	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section....pounds..	96,000
Elastic limit per square inch of original section....do...	49,000
Elongation after rupture....inch..	.43
Elongation under strain at elastic limit....do...	.0063
Reduction in diameter at point of rupture (exterior)....do...	.078
Position of rupture....	".3 from neck
Character of broken surface............	silky, 50 per cent; granular, 50 per cent; cracks along the stem very pronounced.

No. 7033.

Hollow specimen.
Marks, $\overset{.18\ \mathrm{C}}{\mathrm{TN\ EP}}$
Exterior diameter, ″.588.
Interior diameter, ″.300.
Sectional area, .20 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0004	.0004	....	
10,000	.0010	.0006	....	
20,000	.0023	.0013	....	
30,000	.0037	.0014	0.	
40,000	.0051	.0014	....	
48,000	.0060	.0009	....	Elastic limit.
49,000	.0065	.0005	....	
50,000	.0074	.0009	.0010	
51,000	.0081	.0007	....	
52,000	.0088	.0007	....	
53,000	.0092	.0004	....	
54,000	.0100	.0008	....	
55,000	.0112	.0012	....	
56,000	.0122	.0010	....	
58,000	.0162	.0040	....	
60,000	.0200	.0038	....	
65,000	.04	.02	....	
70,000	.06	.02	....	
75,000	.09	.03	....	
80,000	.13	.04	....	
85,000	.19	.06	....	
90,000	.28	.09	....	
91,550	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	91,550
Elastic limit per square inch of original section	do...	48,000
Elongation after rupture	inch..	.47
Elongation under strain at elastic limit	do...	.0060
Reduction in diameter at point of rupture (exterior)	do...	.068
Position of rupture		″.6 from neck
Character of broken surface		silky; opened cracks in surface of stem

No. 7034.

Hollow specimen.
Marks, $\overset{.15\ C}{TN\ EP}$
Exterior diameter, ″.588.
Interior diameter, ″.300.
Sectional area, .20 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0004	.0004	0.	
10,000	.0009	.0005	....	
20,000	.0024	.0015	....	
30,000	.0040	.0016	0.	
40,000	.0058	.0018	....	
47,000	....	....	....	Elastic limit not well defined.
50,000	.0088	.0030	.0019	
51,000	.0092	.0009	....	
52,000	.0100	.0008	....	
53,000	.0109	.0009	....	
54,000	.0123	.0014	....	
56,000	.0180	.0057	....	
58,000	.0220	.0040	....	
60,000	.0277	.0057	....	
65,000	.05	.0223	....	
70,000	.07	.02	....	
75,000	.11	.04	....	
80,000	.16	.05	....	
85,000	.23	.07	....	
89,050	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	89,050
Elastic limit per square inch of original section; not well defined	do...	47,000
Elongation after rupture	inch..	.54
Reduction in diameter at point of rupture (exterior)	do...	.098
Position of rupture		″.2 from neck
Character of broken surface		silky; opened cracks in surface of stem

No. 7035.

Hollow specimen.
Marks, $\overset{.16\ \mathrm{C}}{\mathrm{TL\ EN}}$
Exterior diameter ".588.
Interior diameter ".300.
Sectional area, .20 square inch.
Guaged length on heads, 4".

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0004	.0004	0.	
10,000	.0014	.0010	....	
20,000	.0028	.0014	....	
30,000	.0042	.0014	.0001	
39,000	....	....	....	Elastic limit, approximate.
40,000	.0058	.0016	.0004	
45,000	.0066	.0008	.0014	
46,000	.0072	.0006	....	
47,000	.0080	.0008	....	
48,000	.0084	.0004	....	
49,000	.0086	.0002	....	
50,000	.0089	.0003	.0022	
52,000	.0098	.0009	....	
54,000	.0112	.0014	....	
56,000	.0130	.0018	....	
58,000	.0160	.0030	....	
60,000	.0210	.0050	....	
65,000	.04	.0190	....	
70,000	.06	.02	....	
75,000	.09	.03	....	
80,000	.13	.04	....	
85,000	.18	.05	....	
90,000	.27	.09	....	
93,100	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section.....pounds..	93,100
Elastic limit per square inch of original section (approximate).....do...	39,000
Elongation after rupture.....inch..	.51
Reduction in diameter at point of rupture (exterior).....do...	.098
Position of rupture.....	".3 from neck
Character of broken surface.....	silky 50 per cent, granular 50 per cent. Opened cracks in surface of stem.

No. 7036.

Hollow specimen.
Marks, $\overset{.16\ \mathrm{C}}{\mathrm{TL\ EN}}$
Exterior diameter, ″.588.
Interior diameter, ″.300.
Sectional area, .20 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0004	.0004	0.	
10,000	.0010	.0006	....	Surface not hardened, can be filed.
20,000	.0022	.0012	....	
30,000	.0035	.0013	0.	
40,000	.0049	.0014	0.	
50,000	.0061	.0012	....	
60,000	.0075	.0014	0.	
64,000	.0080	.0005	....	
65,000	.0081	.0001	....	Elastic limit.
	.0615	.0584	....	
66,000	.0630	.0015	....	
68,000	.0755	.0125	....	
70,000	.0980	.0225	....	
75,000	.14	.0420	....	
80,000	.28	.09	....	
85,000	.42	.19	....	
86,000	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	86,000
Elastic limit per square inch of original section	do...	65,000
Elongation after rupture	inch..	.57
Elongation under strain at elastic limit	do...	.0081
Reduction in diameter at the point of rupture (exterior)	do...	.128
Position of rupture		″.85 from neck
Character of broken surface		silky

No. 7037.

Hollow specimen.
Marks, $\overset{.15\ C}{TL\ EN}$
Exterior diameter, ″.588.
Interior diameter, ″.300.
Sectional area, .20 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0004	.0004	0.	
10,000	.0011	.0007	....	
20,000	.0027	.0016	....	
30,000	.0040	.0013	....	
40,000	.0052	.0012	.0001	
48,000	.0071	.0019	....	
49,000	.0073	.0002	....	Elastic limit.
50,000	.0087	.0014	.0020	
51,000	.0092	.0005	....	
52,000	.0099	.0007	....	
54,000	.0115	.0016	....	
56,000	.0155	.0040	....	
58,000	.0190	.0035	....	
60,000	.0240	.0050	....	
65,000	.05	.0260	....	
70,000	.07	.02	....	
75,000	.10	.03	....	
80,000	.15	.05	....	
90,000	.37	.22	....	
91,500	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	91,500
Elastic limit per square inch of original section	do...	49,000
Elongation after rupture	inch..	.60
Elongation under strain at elastic limit	do...	.0073
Reduction in diameter at point of rupture (exterior)	do...	.108
Position of rupture		″.85 from neck
Character of broken surface		silky

No. 7038.

Hollow specimen.
Marks, $\overset{.18\ \mathrm{C}}{\mathrm{TL\ EP}}$
Exterior diameter, ″.588.
Interior diameter, ″.300.
Sectional area, .20 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0005	.0005	0.	
10,000	.0014	.0009	....	
20,000	.0027	.0013	....	
30,000	.0039	.0012	.0001	
38,000	.0048	.0009	....	
39,000	.0050	.0002	....	Elastic limit.
40,000	.0058	.0008	.0007	
41,000	.0061	.0003	....	
42,000	.0064	.0003	....	
43,000	.0069	.0005	....	
44,000	.0072	.0003	....	
45,000	.0075	.0003	.0019	
46,000	.0089	.0014	....	
50,000	.0110	.0021	....	
55,000	.0220	.0110	....	
60,000	.03	.0080	....	
65,000	.05	.02	....	
70,000	.07	.02	....	
75,000	.11	.04	....	
80,000	.16	.05	....	
90,000	.42	.26	....	
90,100	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	90,100
Elastic limit per square inch of original section	do...	39,000
Elongation after rupture	inch..	.49
Elongation under strain at elastic limit	do...	.0050
Reduction in diameter at point of rupture (exterior)	do...	.068
Position of rupture		″.35 from neck
Character of broken surface		granular 80 per cent, silky 20 per cent; opened, very pronounced cracks along surface of stem.

No. 7039.

Hollow specimen.
Marks, $\overset{.16\ \mathrm{C}}{\mathrm{TL\ EP}}$
Exterior diameter, ".588.
Interior diameter, ".300.
Sectional area, .20 square inch.
Gauged length on heads, 4".

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0002	.0002	0.	
10,000	.0006	.0004	....	
20,000	.0019	.0008	....	
30,000	.0032	.0013	0.	
40,000	.0050	.0018	.0003	
44,000	.0061	.0011	....	Elastic limit, approximate.
45,000	.0068	.0007	.0010	
46,000	.0072	.0004	....	
47,000	.0080	.0008	....	
48,000	.0085	.0005	....	
49,000	.0091	.0006	....	
50,000	.0100	.0009	.0033	
52,000	.0120	.0020	....	
54,000	.0148	.0028	....	
56,000	.0180	.0037	....	
60,000	.0273	.0093	....	
65,000	.04	.0127	....	
70,000	.06	.02	....	
75,000	.10	.04	....	
80,000	.15	.05	....	
85,000	.21	.06	....	
89,500	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	89,500
Elastic limit per square inch of original section (approximate)	do...	44,000
Elongation after rupture	inch..	.43
Elongation under strain at elastic limit	do...	.0061
Reduction in diameter at point of rupture (exterior)	do...	.068
Position of rupture		".3 from neck
Character of broken surface		silky 80 per cent, granular 20 per cent. Opened cracks along surface of stem.

No. 7040.

Hollow specimen.
Marks, $\overset{.16\,\mathrm{C}}{\mathrm{TL\,EP}}$
Exterior diameter, ″.588.
Interior diameter, ″.300.
Sectional area, .20 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0002	.0002	0.	
10,000	.0008	.0006	....	
20,000	.0020	.0012	....	
30,000	.0032	.0012	0.	
35,000	.0041	.0009	....	
38,000	.0049	.0008	.0001	
40,000	.0053	.0004	....	Elastic limit.
42,000	.0060	.0007	.0008	
44,000	.0070	.0010	....	
46,000	.0080	.0010	....	
48,000	.0098	.0018	....	
50,000	.0113	.0015	....	
55,000	.0189	.0076	....	
60,000	.0278	.0089	....	
65,000	.04	.0122	....	
70,000	.07	.03	....	
75,000	.11	.04	....	
80,000	.16	.05	....	
85,000	.24	.08	....	
87,100	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section .... pounds..	87,100
Elastic limit per square inch of original section .... do...	40,000
Elongation after rupture .... inch..	.35
Elongation under strain at elastic limit .... do...	.0053
Reduction in diameter at point of rupture .... do...	.058
Position of rupture	″.3 from neck
Character of broken surface	granular 90 per cent, silky 10 per cent; opened cracks along surface of stem.

No. 7044.

Steel in natural state. turned down from hot rolled bar.
Marks, .34 C.
Diameter, ".564.
Sectional area, .25 square inch.
Gauged length on heads, 4".

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0003	.0003	0.	
10,000	.0010	.0007	....	
20,000	.0021	.0011	....	
30,000	.0034	.0013	....	
40,000	.0048	.0014	0.	
50,000	.0060	.0012	....	
54,000	.0064	.0004	....	Elastic limit.
55,000	.0068	.0004	....	
56,000	.0650	.0582	....	
58,000	.0690	.0040	....	
60,000	.0790	.0100	....	
65,000	.10	.0210	....	
70,000	.14	.04	....	
75,000	.18	.04	....	
80,000	.29	.11	....	
85,000	.49	.20	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	85,000
Elastic limit per square inch of original section	do...	54,000
Elongation after rupture	inch..	.79
Elongation under strain at elastic limit	do...	.0064
Reduction in diameter at point of rupture	do...	.174
Reduction in area after rupture, per cent of original section		52.2
Position of rupture		at middle of stem
Character of broken surface		silky
Elongation of inch sections on stem		".17, ".44*, ".16

No. 7045.

Steel in natural state, turned down from hot rolled bar.
Marks, .34 C.
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0003	.0008	0.	
10,000	.0011	.0008	....	
20,000	.0025	.0014	....	
30,000	.0038	.0013	....	
40,000	.0050	.0012	0.	
50,000	.0062	.0012	....	
52,000	.0066	.0004	....	
53,000	.0068	.0002	....	Elastic limit.
54,000	.0572	.0504	....	
55,000	.0590	.0018	....	
56,000	.0620	.0030	....	
60,000	.0800	.0180	....	
65,000	.11	.03	....	
70,000	.15	.04	....	
75,000	.19	.04	....	
80,000	.27	.08	....	
85,000	.55	.28	....	Tensile strength.

General summary.

Tensile strength per square inch of original section....pounds..	85,000
Elastic limit per square inch of original section....do...	53,000
Elongation after rupture....inch..	.81
Elongation under strain at elastic limit....do...	.0068
Reduction in diameter at point of rupture....do...	.174
Reduction in area after rupture, per cent of original section....	52.2
Position of rupture....	1″.7 from neck
Character of broken surface....	fine silky
Elongation of inch sections on stem....	″.17, ″.41*, ″.18

No. 7046.

Steel in natural state turned down from hot-rolled bar.
Marks, .34 C.
Diameter, ".564.
Sectional area, .25 square inch.
Gauged length on heads, 4".

Applied loads per square inch.	In gauged lengths.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0004	.0004	0.	
10,000	.0011	.0007	....	
20,000	.0025	.0014	....	
30,000	.0039	.0014	....	
40,000	.0051	.0012	0.	
50,000	.0063	.0012	....	
52,000	.0065	.0002	....	
53,000	.0067	.0002	....	Elastic limit.
54,000	.0590	.0523	....	
55,000	.0602	.0012	....	
56,000	.0641	.0039	....	
60,000	.0802	.0161	....	
65,000	.11	.0298	....	
70,000	.15	.04	....	
75,000	.19	.04	....	
80,000	.26	.07	....	
84,880	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	84,880
Elastic limit per square inch of original section	do...	53,000
Elongation after rupture	inch..	.80
Elongation under strain at elastic limit	do..	.0067
Reduction in diameter at point of rupture	do..	.174
Reduction in area after rupture, per cent of original section		52.2
Position of rupture		at middle of stem
Character of broken surface		fine silky
Elongation of inch sections on stem		".17, ".44*, ".17

No. 7062.

Heated in lime, not case hardened.
Marks, $\overset{.34\ \mathrm{C}}{\mathrm{TN\ EN}}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged lengths.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0005	.0005	0.	
10,000	.0010	.0005	....	
20,000	.0022	.0012	....	
30,000	.0037	.0015	0.	
40,000	.0050	.0013	....	
48,000	.0060	.0010	....	Elastic limit.
49,000	.0550	.0490	....	
50,000	.0590	.0040	....	
52,000	.0658	.0068	....	
54,000	.0745	.0087	....	
56,000	.0860	.0115	....	
60,000	.1062	.0202	....	
65,000	.14	.0338	....	
70,000	.19	.05	....	
75,000	.26	.07	....	
80,000	.47	.21	....	
80,720	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	80,720
Elastic limit per square inch of original section	do	48,000
Elongation after rupture	inch	.81
Elongation under strain at elastic limit	do	.0060
Reduction in diameter at point of rupture	do	.154
Reduction in area after rupture, per cent of original section		47.2
Position of rupture		1″.5 from neck
Character of broken surface		fine silky
Elongation of inch sections on stem		″.17, ″.39*, ″.23

No. 7063.

Heated in lime, not case hardened.
Marks, $\overset{.34\ \mathrm{C}}{\mathrm{TN\ EN}}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0005	0.005	0.	
10,000	.0011	.0006	....	
20,000	.0021	.0010	....	
30,000	.0033	.0012	....	
40,000	.0048	.0015	0.	
50,000	.0060	.0012	....	Elastic limit.
	.0568	.0508	....	
51,000	.0587	.0019	....	
52,000	.0618	.0031	....	
54,000	.0700	.0082	....	
56,000	.0780	.0080	....	
60,000	.0980	.0200	....	
65,000	.13	.0320	....	
70,000	.18	.05	....	
75,000	.25	.07	....	
80,000	.38	.13	....	
81,600	....	....	....	Tensile strength.

General summary.

Textile strength per square inch of original section	pounds	81,600
Elastic limit per square inch of original section	do	50,000
Elongation after rupture	inch	.77
Elongation under strain at elastic limit	do	.0060
Reduction in diameter at point of rupture	do	.164
Reduction in area after rupture, per cent of original section		49.7
Position of rupture		1″ from neck
Character of broken surface		fine silky
Elongation of inch sections on stem		″.15, ″.22, ″.37*

No. 7064.

Heated in lime, not case hardened.
Marks, $\overset{.34\text{ C}}{\text{TN EN}}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length on heads, 4″.

Applied load per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0005	.0005	0.	
10,000	.0011	.0006	....	
20,000	.0024	.0013	....	
30,000	.0037	.0013	.0001	
40,000	.0050	.0013	.0001	
49,000	.0060	.0010	....	Elastic limit.
50,000	.0570	.0510	....	
51,000	.0600	.0030	....	
52,000	.0663	.0063	....	
54,000	.0730	.0067	....	
56,000	.0840	.0110	....	
60,000	.11	.0260	....	
65,000	.15	.04	....	
70,000	.19	.04	....	
75,000	.26	.07	....	
80,000	.44	.18	....	
80,400	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	80,400
Elastic limit per square inch of original section....................do...	49,000
Elongation after rupture....................inch..	.81
Elongation under strain at elastic limit....................do...	.0060
Reduction in diameter at point of rupture....................do...	.154
Reduction in area after rupture, per cent of original section....................	47.2
Position of rupture....................	1″.7 from neck
Character of broken surface....................	fine silky
Elongation of inch sections or stem	″.20, ″.42*, ″.16

No. 7065.

Heated in lime, not case hardened.
Marks, $\overset{.34\,\mathrm{C}}{\mathrm{TL\ EN}}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0004	.0004	0.	
10,000	.0011	.0007	....	
20,000	.0024	.0013	....	
30,000	.0038	.0014	0.	
40,000	.0051	.0013	....	
49,000	.0060	.0009	....	Elastic limit.
50,000	.0640	.0580	....	
51,000	.0680	.0040	....	
52,000	.0730	.0050	....	
54,000	.0810	.0080	....	
56,000	.0915	.0105	....	
60,000	.13	.0385	....	
65,000	.16	.03	....	
70,000	.22	.06	....	
75,000	.31	.09	....	
79,200	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	79,200
Elastic limit per square inch of original section	do...	49,000
Elongation after rupture	inch..	.89
Elongation under strain at elastic limit	do...	.0060
Reduction in diameter at point of rupture	do...	.184
Reduction in area after rupture, per cent of original section		54.6
Position of rupture		at middle of stem
Character of broken surface		fine silky
Elongation of inch sections on stem		″.20, ″.47*, ″.19

No. 7066.

Heated in lime, not case hardened.
Marks, $\overset{.34}{\mathrm{TL}}\,\overset{\mathrm{C}}{\mathrm{EN}}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0004	.0004	0.	
10,000	.0010	.0006	....	
20,000	.0021	.0011	....	
30,000	.0035	.0014	0.	
40,000	.0049	.0014	....	
48,000	.0059	.0010	....	Elastic limit.
49,000	.0600	.0541	....	
50,000	.0650	.0050	....	
51,000	.0680	.0030	....	
52,000	.0723	.0043	....	
56,000	.10	.0277	....	
60,000	.13	.03	....	
65,000	.16	.03	....	
70,000	.22	.06	....	
75,000	.33	.11	....	
78,880	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	78,880
Elastic limit per square inch of original section	do	48,000
Elongation after rupture	inch	.87
Elongation under strain at elastic limit	do	.0059
Reduction in diameter at point of rupture	do	.184
Reduction in area after rupture, per cent of original section		54.6
Position of rupture		at middle of stem
Character of broken surface		fine silky
Elongation of inch sections on stem		″.19, ″.47*, ″.19

No. 7067.

Heated in lime, not case hardened
Marks, $\overset{.34}{\mathrm{TL}}\,\overset{\mathrm{C}}{\mathrm{EN}}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0004	.0004	0.	
10,000	.0010	.0006	....	
20,000	.0023	.0013	....	
30,000	.0038	.0015	0.	
40,000	.0050	.0012	....	
48,000	.0060	.0010	....	Elastic limit.
49,000	.0610	.0550	....	
50,000	.0643	.0033	....	
51,000	.0670	.0027	....	
52,000	.0730	.0060	....	
56,000	.10	.0270	....	
60,000	.12	.02	....	
65,000	.16	.04	....	
70,000	.22	.06	....	
75,000	.31	.09	....	
78,960	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	78,960
Elastic limit per square inch of original section	do...	48,000
Elongation after rupture	inch..	.88
Elongation under strain at elastic limit	do...	.0060
Reduction in diameter at point of rupture	do...	.184
Reduction in area after rupture, per cent of original section		54.6
Position of rupture		1″.7 from neck
Character of broken surface		fine silky
Elongation of inch sections on stem		″.22, ″.45*, ″.18

No. 7047.

Marks, $\overset{.34\text{ C}}{\text{TN EN}}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0003	.0003	0.	
10,000	.0010	.0007	....	
20,000	.0022	.0012	....	
30,000	.0037	.0015	....	
36,000	.0050	.0013	.0002	
37,000	....	....	....	Elastic limit (approximate).
40,000	.0060	.0010	.0009	
44,000	.0070	.0010	....	
46,000	.0078	.0008	....	
48,000	.0085	.0007	....	
50,000	.0094	.0009	.0030	
55,000	.0120	.0026	....	
60,000	.0180	.0060	....	
65,000	.0250	.0070	....	
70,000	.0355	.0105	....	
75,000	.05	.0145	....	
80,000	.07	.02	....	
85,000	.09	.02	....	
90,000	.11	.02	....	
95,000	.14	.03	....	
100,000	.19	.05	....	
105,000	.30	.11	....	
106,400	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	106,400
Elastic limit per square inch of original section (approximate)	do...	37,000
Elongation after rupture	inch..	.52
Reduction in diameter at point of rupture	do...	.074
Reduction in area after rupture, per cent of original section		24.6
Position of rupture		1″.1 from neck
Character of broken surface		granular, radiating from a silky spot at the circumference; opened minute cracks in surface of stem.

No. 7048.

Marks, $\overset{.34\ \mathrm{C}}{\mathrm{TN}\ \mathrm{EN}}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0004	.0004	0.	
10,000	.0011	.0007	....	
20,000	.0026	.0015	....	
30,000	.0040	.0014	.0002	
36,000	.0050	.0010	....	Elastic limit (approximate).
37,000	.0054	.0004	....	
38,000	.0060	.0006	....	
39,000	.0062	.0002	....	
40,000	.0064	.0002	.0013	
41,000	.0066	.0002	....	
42,000	.0069	.0003	....	
43,000	.0071	.0002	....	
44,000	.0073	.0002	....	
45,000	.0078	.0005	....	
46,000	.0081	.0003	.0022	
48,000	.0090	.0009	....	
50,000	.0100	.0010	....	
55,000	.0126	.0026	....	
60,000	.0190	.0064	....	
65,000	.0260	.0070	....	
70,000	.0353	.0093	....	
80,000	.07	.0347	....	
90,000	.11	.04	....	
100,000	.18	.07	....	
106,840	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	106,840
Elastic limit per square inch of original section (approximate) ....do...	36,000
Elongation after rupture............inch..	.44
Elongation under strain at elastic limit............do...	.0050
Reduction in diameter at point of rupture............do...	.054
Reduction in area after rupture, per cent of original section............	18.3
Position of rupture............	″.85 from neck
Character of broken surface	granular, radiating from a point in the circumference; opened cracks in surface of stem.

No. 7049.

Marks, $\overset{.34\ \mathrm{C}}{\mathrm{TN\ EN}}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0003	.0003	0.	
10,000	.0009	.0006	....	
20,000	.0020	.0011	....	
30,000	.0032	.0012	0.	
40,000	.0046	.0014	0.	
50,000	.0063	.0017	.0001	Elastic limit.
51,000	.0068	.0005	....	
52,000	.0340	.0272	....	
53,000	.0361	.0021	....	
54,000	.0387	.0026	....	
56,000	.0460	.0073	....	
60,000	.0620	.0160	....	
65,000	.09	.0280	....	
70,000	.12	.03	....	
80,000	.22	.10	....	
86,080	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	86,080
Elastic limit per square inch of original section	do	50,000
Elongation after rupture	inch	.66
Elongation under strain at elastic limit	do	.0063
Reduction in diameter at point of rupture	do	.124
Reduction in area after rupture, per cent of original section		39.2
Position of rupture		″.85 from neck
Character of broken surface		silky, oblique; opened minute cracks in surface of stem

No. 7050.

Marks, $\overset{.34\ \mathrm{C}}{\mathrm{TN\ EP}}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0003	.0003	0.	
10,000	.0010	.0007	....	
20,000	.0022	.0012	....	
30,000	.0036	.0014	0.	
40,000	.0052	.0016	.0002	
42,000	....	....	....	Elastic limit (approximate).
46,000	.0070	.0018	.0012	
48,000	.0079	.0009	....	
50,000	.0091	.0012	....	
52,000	.0120	.0029	....	
54,000	.0160	.0040	....	
56,000	.0203	.0043	....	
60,000	.0298	.0095	....	
65,000	.0410	.0112	....	
70,000	.0580	.0170	....	
80,000	.11	.0520	....	
90,000	.18	.07	....	
98,040	....	....	....	Tensile strength.

General summary.

Textile strength per square inch of original section	pounds..	98,040
Elastic limit per square inch of original section (approximate)	do...	42,000
Elongation after rupture	inch..	.55
Reduction in diameter at point of rupture	do...	.104
Reduction in area after rupture, per cent of original section		33.5
Position of rupture		″.85 from neck
Character of broken surface		granular, 70 per cent; silky, 30 per cent; opened cracks in surface of stem.

No. 7051.

Marks, TN $\overset{\text{C}}{\text{EP}}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0004	.0004	0.	
10,000	.0011	.0007	....	
20,000	.0022	.0011	....	
30,000	.0038	.0016	.0001	
38,000	.0044	.0006	....	Elastic limit.
39,000	.0051	.0007	....	
40,000	.0057	.0006	.0009	
42,000	.0062	.0005	....	
44,000	.0069	.0007	....	
46,000	.0076	.0007	....	
48,000	.0083	.0007	....	
50,000	.0090	.0007	....	
55,000	.0114	.0024	....	
60,000	.0168	.0054	....	
65,000	.0230	.0062	....	
70,000	.0330	.0100	....	
80,000	.0595	.0265	....	
90,000	.10	.0405	....	
100,000	.17	.07	....	
108,200	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds.. 108,200
Elastic limit per square inch of original section..do... 38,000
Elongation after rupture..inch.. .33
Elongation under strain at elastic limit...do... .0044
Reduction in diameter at point of rupture ....do... .034
Reduction in area after rupture, per cent of original section....................................... 11.8
Position of rupture.. .... 1″ from neck
Character of broken surface................................ granular; opened cracks in surface of stem

No. 7098.

Marks, $\overset{.34\text{ C}}{\text{TN EP}}$
Diameter, ".564.
Sectional area, .25 square inch.
Gauged length on heads, 4".

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0005	.0005	0.	
10,000	.0011	.0006	....	
20,000	.0023	.0012	....	
30,000	.0040	.0017	....	
38,000	.0049	.0009	....	
39,000	.0051	.0002	....	Elastic limit.
40,000	.0060	.0009	.0010	
42,000	.0069	.0009	....	
44,000	.0074	.0005	....	
46,000	.0080	.0006	....	
48,000	.0089	.0009	....	
50,000	.0099	.0010	.0031	
52,000	.0109	.0010	....	
56,000	.0142	.0033	....	
60,000	.0176	.0034	....	
65,000	.0245	.0069	....	
70,000	.0350	.0105	....	
80,000	.06	.0250	....	
90,000	.10	.04	....	
100,000	.19	.09	....	
106,800	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	106,800
Elastic limit per square inch of original section	do...	39,000
Elongation after rupture	inch..	.49
Elongation under strain at elastic limit	do...	.0051
Reduction in diameter at point of rupture	do...	.064
Reduction in area after rupture, per cent of original section		21.4
Position of rupture		1".6 from neck
Character of broken surface		granular, radiating from a point in the circumference

No. 7052.

Marks, $\overset{.34\ \mathrm{C}}{\mathrm{TL\ EN}}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0004	.0004	....	
10,000	.0011	.0007	....	
20,000	.0024	.0013	....	
30,000	.0040	.0016	0.	
40,000	.0051	.0011	.0001	
48,000	....	....	....	Elastic limit (approximate).
50,000	.0070	.0019	.0008	
51,000	.0220	.0150	....	
52,000	.0360	.0140	....	
54,000	.0400	.0040	....	
56,000	.0470	.0070	....	
60,000	.0650	.0080	....	
65,000	.09	.0250	....	
70,000	.13	.04	....	
80,000	.22	.09	....	
85,920	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	85,920
Elastic limit per square inch of original section (approximate) ....do...	48,000
Elongation after rupture ....inch..	.70
Reduction in diameter at point of rupture ....do...	.134
Reduction in area after rupture, per cent of original section	41.9
Position of rupture	1″.25 from neck
Character of broken surface	silky oblique; opened minute cracks in surface of stem

No. 7099.

Marks, $\overset{.34}{\mathrm{TL}}\ \overset{\mathrm{C}}{\mathrm{EN}}$
Diameter, ".564.
Sectional area, .25 square inch.
Gauged length on heads, 4".

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0005	.0005	0.	
10,000	.0011	.0006	....	
20,000	.0022	.0011	....	
30,000	.0037	.0015	0.	
40,000	.0054	.0017	.0003	
42,000	.0060	.0006	....	
44,000	.0068	.0008	....	Elastic limit, approximate.
48,000	.0083	.0015	....	
50,000	.0100	.0017	.0034	
52,000	.0118	.0018	....	
54,000	.0152	.0034	....	
56,000	.0195	.0043	....	
60,000	.0283	.0088	....	
70,000	.06	.0317	....	
80,000	.10	.04	....	
90,000	.18	.08	....	
98,400	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	98,400
Elastic limit per square inch of original section (approximate)	do...	44,000
Elongation after rupture	inch..	.52
Elongation under strain at elastic limit	do...	.0068
Reduction in diameter at point of rupture	do...	.114
Reduction in area after rupture, per cent of original section		36.4
Position of rupture		".45 from neck
Character of broken surface		granular, 60 per cent; silky oblique, 40 per cent

No. 7053.

Marks, $\overset{.34\ C}{TL\ EP}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0004	.0004	0.	
10,000	.0012	.0008	....	
20,000	.0026	.0014	....	
30,000	.0041	.0015	.0002	
34,000	....	....	....	Elastic limit, approximate.
40,000	.0062	.0021	.0010	
42,000	.0070	.0008	....	
44,000	.0077	.0007	....	
46,000	.0080	.0003	....	
48,000	.0088	.0008	....	
50,000	.0096	.0008	.0029	
55,000	.0115	.0019	....	
60,000	.0154	.0039	....	
65,000	.0210	.0056	....	
70,000	.0290	.0080	....	
80,000	.0515	.0225	....	
90,000	.08	.0285	....	
100,000	.14	.06	....	
104,400	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	104,400
Elastic limit per square inch of original section (approximate)	do...	34,000
Elongation after rupture	inch..	.17
Reduction in diameter at point of rupture	do...	.014
Reduction in area after rupture, per cent of original section		5.0
Position of rupture		1″.4 from neck
Character of broken surface		granular; opened cracks along surface of stem

No. 7100.

Marks, $\overset{.34\ \mathrm{C}}{\mathrm{TL\ EP}}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0004	.0004	0.	
10,000	.0011	.0007	....	
20,000	.0024	.0013	....	
30,000	.0039	.0015	.0001	
39,000	....	....	....	Elastic limit, approximate.
40,000	.0060	.0021	.0010	
42,000	.0068	.0008	....	
44,000	.0071	.0003	....	
46,000	.0079	.0008	....	
48,000	.0088	.0009	....	
50,000	.0092	.0004	.0028	
52,000	.0100	.0008	....	
54,000	.0110	.0010	....	
56,000	.0123	.0013	....	
60,000	.0159	.0036	....	
70,000	.0320	.0161	....	
80,000	.06	.0280	....	
90,000	.09	.03	....	
100,000	.16	.07	....	
106,880	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	106,880
Elastic limit per square inch of original section (approximate)	do...	39,000
Elongation after rupture	inch..	.45
Reduction in diameter at point of rupture	do...	.064
Reduction in area after rupture, per cent of original section		21.4
Position of rupture		at middle of stem
Character of broken surface		granular, radiating from a point in the circumference; very pronounced cracks opened in the surface of stem.

No. 7101.

Hollow specimen.
Marks, $\overset{.34\ \mathrm{C}}{\mathrm{TN}\ \ \mathrm{EN}}$
Exterior diameter, ″.588.
Interior diameter, ″.300.
Sectional area, .20 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0004	.0004	0.	
10,000	.0012	.0008	....	
20,000	.0022	.0010	....	
30,000	.0036	.0014	0.	
40,000	.0048	.0012	0.	
50,000	.0059	.0011	0.	
60,000	.0071	.0012	....	Elastic limit.
61,000	.0530	.0459	....	
62,000	.0550	.0020	....	
64,000	.0620	.0070	....	
66,000	.0710	.0090	....	
70,000	.0920	.0210	....	
75,000	.12	.0280	....	
80,000	.17	.05	....	
85,000	.22	.05	....	
90,000	.39	.17	....	
91,000	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	91,000
Elastic limit per square inch of original section	do...	60,000
Elongation after rupture	inch..	.67
Elongation under strain at elastic limit	do...	.0071
Reduction in diameter at point of rupture (exterior)	do...	.138
Position of rupture		1″.25 from neck
Character of broken surface		silky, minute cracks developed in stem

The surface of this specimen could be marked with a file, but with difficulty.

No. 7102.

Hollow specimen.
Marks, $\overset{.34\ \mathrm{C}}{\mathrm{TN\ EN}}$
Exterior diameter, ″.588.
Interior diameter, ″.300.
Sectional area, .20 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0005	.0005	....	
10,000	.0011	.0006	....	
20,000	.0022	.0011	....	
30,000	.0037	.0015	.0001	
40,000	.0052	.0015	....	
44,000	.0058	.0006	....	Elastic limit.
45,000	.0070	.0012	.0017	
46,000	.0076	.0006	....	
47,000	.0080	.0004	....	
48,000	.0082	.0002	....	
49,000	.0087	.0005	....	
50,000	.0090	.0003	.0030	
52,000	.0102	.0012	....	
54,000	.0115	.0013	....	
56,000	.0131	.0016	....	
60,000	.0182	.0051	....	
65,000	.0250	.0068	....	
70,000	.0340	.0090	....	
80,000	.06	.0260	....	
90,000	.09	.03	....	
100,000	.16	.07	....	
107,000	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	107,000
Elastic limit per square inch of original section	do. .	44,000
Elongation after rupture	inch..	.30
Elongation under strain at elastic limit	do...	.0058
Reduction in diameter at point of rupture (exterior)	do...	.068
Position of rupture		″.4 from neck
Character of broken surface		granular

No. 7103.

Hollow specimen.
Marks, $\begin{matrix}\text{.34} & \text{C}\\ \text{TN} & \text{EP}\end{matrix}$
Exterior diameter, ″.588.
Interior diameter, ″.300.
Sectional area, .20 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0004	.0004	0.	
10,000	.0011	.0007	....	
20,000	.0023	.0012	....	
30,000	.0038	.0015	.0001	
38,000	....	....	....	Elastic limit (approximate).
40,000	.0059	.0021	.0010	
41,000	.0062	.0003	....	
42,000	.0065	.0003	....	
43,000	.0068	.0003	....	
44,000	.0071	.0003	.0018	
46,000	.0079	.0008	....	
50,000	.0092	.0013	....	
55,000	.0116	.0024	....	
60,000	.0145	.0029	....	
65,000	.0182	.0037	....	
70,000	.0243	.0061	....	
80,000	.04	.0157	....	
90,000	.07	.03	....	
100,000	.11	.04	....	
110,000	.18	.07	....	
111,000	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	111,000
Elastic limit per square inch of original section (approximate)	do...	38,000
Elongation after rupture	inch..	.18
Reduction in diameter at point of rupture (exterior)	do...	.028
Position of rupture		at middle of stem
Character of broken surface		granular; opened minute cracks in surface of stem

No. 7104.

Hollow specimen.
Marks, $\overset{.34\ \text{C}}{\text{TN EP}}$
Exterior diameter, ″.588.
Interior diameter, ″.300.
Sectional area, .20 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0002	.0002	0.	
10,000	.0009	.0007	....	
20,000	.0021	.0012	....	
30,000	.0037	.0016	0.	
39,000	.0051	.0014	....	Elastic limit.
40,000	.0059	.0008	.0009	
42,000	.0065	.0006	....	
44,000	.0070	.0005	....	
46,000	.0076	.0006	....	
48,000	.0082	.0006	....	
50,000	.0090	.0008	.0027	
55,000	.0112	.0022	....	
60,000	.0140	.0028	....	
65,000	.0172	.0032	....	
70,000	.0225	.0053	....	
100,000	.09	.0075	....	
102,000	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	102,000
Elastic limit per square inch of original section	do...	39,000
Elongation after rupture	inch..	.09
Elongation under strain at elastic limit	do...	.0051
Reduction in diameter at point of rupture (exterior)	do...	.006
Position of rupture		″.5 from neck
Character of broken surface		granular; opened minute cracks in surface of stem

No. 7105.

Hollow specimen.
Marks, $\overset{.34\ C.}{TL\ EN}$
Exterior diameter, ″.588.
Interior diameter, ″.300.
Sectional area, .20 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0005	.0005	0.	
10,000	.0012	.0007	....	
20,000	.0025	.0013	....	
30,000	.0041	.0016	.0003	
38,000	.0051	.0010	....	Elastic limit.
39,000	.0057	.0006	....	
40,000	.0062	.0005	.0011	
42,000	.0068	.0006	....	
44,000	.0072	.0004	....	
46,000	.0080	.0008	....	
50,000	.0091	.0011	.0034	
55,000	.0110	.0019	....	
60,000	.0131	.0021	....	
65,000	.0161	.0030	....	
70,000	.0200	.0039	....	
80,000	.03	.01	....	
90,000	.05	02	....	
100,000	.07	.02	....	
107,250	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	107,250
Elastic limit per square inch of original section ....do...	38,000
Elongation after rupture ....inch..	.09
Elongation under strain at elastic limit ....do...	.0051
Reduction in diameter at point of rupture (exterior) ....do...	.003
Position of rupture	1″.1 from neck
Character of broken surface	granular; opened minute cracks in surface of stem

No. 7106.

Hollow specimen.
Marks, $\overset{.34}{\mathrm{TL}}\,\overset{\mathrm{C}}{\mathrm{EN}}$
Exterior diameter, ″.588.
Interior diameter, ″.300.
Sectional area, .20 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0005	.0005	0.	
10,000	.0011	.0006	....	
20,000	.0021	.0010	....	
30,000	.0035	.0014	.0001	
38,000	....	....	....	Elastic limit (approximate).
40,000	.0053	.0018	.0009	
42,000	.0060	.0007	....	
44,000	.0066	.0006	....	
46,000	.0071	.0005	....	
48,000	.0080	.0009	....	
50,000	.0087	.0007	.0027	
55,000	.0108	.0021	....	
60,000	.0138	.0030	....	
65,000	.0178	.0040	....	
70,000	.0230	.0052	....	
80,000	.04	.0170	....	
90,000	.07	.03	....	
100,000	.11	.04	....	
109,900	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	109,900
Elastic limit per square inch of original section (approximate)	do...	38,000
Elongation after rupture	inch..	.19
Reduction in diameter at point of rupture (exterior)	do...	.018
Position of rupture		1″.2 from neck
Character of broken surface		granular; opened minute cracks in surface of stem

No. 7107.

Hollow specimen.
Marks, $\begin{matrix}.34\ C\\ TL\ EP\end{matrix}$
Exterior diameter, ″.588.
Interior diameter, ″.300.
Sectional area, .20 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0007	.0007	0.	
10,000	.0012	.0005		
20,000	.0027	.0015		Snapping sounds.
30,000	.0041	.0014	.0008	
38,000				Elastic limit (approximate).
40,000	.0063	.0022	.0012	
42,000	.0070	.0007		
44,000	.0075	.0005		
46,000	.0080	.0005		
48,000	.0088	.0008		
50,000	.0092	.0004	.0030	
55,000	.0110	.0018		
60,000	.0140	.0030		
70,000	.0220	.0080		
80,000	.04	.0180		
90,000	.06	.02		
100,000	.09	.03		
109,950				Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	109,950
Elastic limit per square inch of original section (approximate)	do...	38,000
Elongation after rupture	inch..	.15
Reduction in diameter at point of rupture (exterior)	do...	.018
Position of rupture		″.50 from neck
Character of broken surface		granular; opened minute cracks in surface of stem

No. 7108.

Hollow specimen.
Marks, $\overset{.34\ C}{TL\ EP}$
Exterior diameter, ″.588.
Interior diameter, ″.300.
Sectional area, .20 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0005	.0005	0.	
10,000	.0011	.0006	....	
20,000	.0022	.0011	....	
30,000	.0040	.0018	.0005	
38,000	....	....	....	Elastic limit (approximate).
40,000	.0060	.0020	.0011	
42,000	.0063	.0003	....	
44,000	.0070	.0007	....	
46,000	.0074	.0004	....	
48,000	.0080	.0006	....	
50,000	.0086	.0006	.0021	
55,000	.0100	.0014	....	
60,000	.0118	.0018	....	
65,000	.0140	.0022	....	
70,000	.0166	.0026	....	
80,000	.03	.0134	....	
90,000	.04	.01	....	
100,000	.05	.01	....	
104,500	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	104,500
Elastic limit per square inch of original section (approximate)	do...	38,000
Elongation per inch after rupture	inch..	.05
Reduction in diameter at point of rupture (exterior)	do...	.008
Position of rupture		at the neck
Character of broken surface		granular

No. 7068.

Steel in natural state, from hot rolled bar.
Marks, .55 C.
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0004	.0004	0.	
10,000	.0011	.0007	....	
20,000	.0025	.0014	....	
30,000	.0040	.0015	....	
40,000	.0051	.0011	0.	
50,000	.0066	.0015	....	
58,000	.0078	.0012	....	
59,000	.0079	.0001	....	Elastic limit.
60,000	.0263	.0184	....	
61,000	.0300	.0037	....	
62,000	.0320	.0020	....	
64,000	.0360	.0040	....	
66,000	.0404	.0044	....	Rested 1 hour under load.
	.0420	.0016	....	
68,000	.0433	.0013	....	
70,000	.0483	.0050	....	
72,000	.0550	.0067	....	
75,000	.07	.0150	....	
80,000	.08	.01	....	
85,000	.10	.02	....	
90,000	.12	.02	....	
100,000	.18	.06	....	
109,920	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section......pounds..	109,920
Elastic limit per square inch of original section......do...	59,000
Elongation after rupture......inch..	.55
Elongation under strain at elastic limit......do...	.0079
Reduction in diameter at point of rupture......do...	.104
Reduction in area after rupture, per cent of original section......	33.5
Position of rupture......	at middle of stem
Character of broken surface......	silky, interspersed with fine granulation
Elongation of inch sections on stem......	″.18, ″.28*, ″.12

No. 7069.

Steel in natural state from hot-rolled bar.
Marks, .55 C.
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0005	.0005	0.	
10,000	.0011	.0006	....	
20,000	.0026	.0015	....	
30,000	.0040	.0014	....	
40,000	.0052	.0012	0.	
50,000	.0065	.0013	....	
58,000	.0078	.0013	....	Elastic limit.
59,000	.0290	.0012	....	
60,000	.0298	.0008	....	
61,000	.0304	.0006	....	
62,000	.0320	.0016	....	
65,000	.0375	.0055	....	
70,000	.0495	.0120	....	
75,000	.07	.0205	....	
80,000	.09	.02	....	
90,000	.12	.03	....	
100,000	.18	.06	....	
109,640	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section....pounds..	109,640
Elastic limit per square inch of original section....do...	58,000
Elongation after rupture....inch..	.55
Elongation under strain at elastic limit....do...	.0078
Reduction in diameter at point of rupture....do...	.104
Reduction in area after rupture, per cent of original section....	33.5
Position of rupture....	1″.4 from neck
Character of broken surface....	silky, interspersed with fine granulation
Elongation of inch sections on stem....	″.16, ″.25*, ″.12

No. 7070.

Steel in natural state from hot-rolled bar.
Marks, .55 C.
Diameter, ".564.
Sectional area, .25 square inch.
Gauged length on heads, 4".

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0003	.0003	0.	
10,000	.0010	.0007	....	
20,000	.0022	.0012	....	
30,000	.0038	.0016	....	
40,000	.0050	.0012	0.	
50,000	.0062	.0012	....	
58,000	.0073	.0011	....	Elastic limit.
59,000	.0265	.0192	....	
60,000	.0281	.0016	....	
62,000	.0311	.0030	....	
65,000	.0372	.0061	....	
70,000	.0493	.0121	....	
75,000	.07	.0207	....	
80,000	.09	.02	....	
90,000	.12	.03	....	
100,000	.18	.06	....	
109,680	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	109,680
Elastic limit per square inch of original section	do...	58,000
Elongation after rupture	inch..	.55
Elongation under strain at elastic limit	do...	.0073
Reduction in diameter at point of rupture	do...	.104
Reduction in area after rupture, per cent of original section		33.5
Position of rupture		1".5 from neck
Character of broken surface		silky, interspersed with fine granulation
Elongation of inch sections on stem		".14, ".28*, ".11

No. 7109.

Marks, $\overset{.55\ C}{\text{TN EN}}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0004	.0004	0.	
10,000	.0013	.0009	....	
20,000	.0026	.0013	....	
30,000	.0040	.0014	....	
40,000	.0055	.0015	.0001	
50,000	.0071	.0016	....	
60,000	.0085	.0014	....	
70,000	.0100	.0015	....	
77,000	....	....	....	Elastic limit (approximate).
80,000	.0127	.0027	.0018	
90,000	.0188	.0061	....	
100,000	.0308	.0120	....	
110,000	.05	.0192	....	
120,000	.08	.03	....	
127,600	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	127,600
Elastic limit per square inch of original section (approximate)	do...	77,000
Elongation after rupture	inch..	.09
Reduction in diameter at point of rupture	do...	.014
Reduction in area after rupture, per cent of original section		5.0
Position of rupture		1″ from neck
Character of broken surface		granular

No. 7110.

Marks, .55 C TN EN
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0004	.0004	0.	
10,000	.0013	.0009	....	
20,000	.0025	.0012	....	
30,000	.0037	.0012	....	
40,000	.0051	.0014	.0001	
50,000	.0066	.0015	....	
60,000	.0085	.0019	....	
67,000	....	....	....	Elastic limit (approximate).
70,000	.0109	.0024	....	
80,000	.0190	.0081	.0078	
90,000	.03	.0110	....	
100,000	.05	.02	....	
110,000	.07	.02	....	
120,000	.11	.04	....	
125,200	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	125,200
Elastic limit per square inch of original section (approximate)	do...	67,000
Elongation after rupture	inch..	.13
Reduction in diameter at point of rupture	do...	.014
Reduction in area after rupture, per cent of original section		5.0
Position of rupture		1″ from neck
Character of broken surface		granular

No. 7071.

Steel in natural state, from hot rolled bar.
Marks, .73 C.
Diameter, ".564.
Sectional area, .25 square inch.
Gauged lengths on heads, 4".

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0003	.0003	0.	
10,000	.0010	.0007	....	
20,000	.0022	.0012	....	
30,000	.0037	.0015	....	
40,000	.0050	.0013	....	
50,000	.0062	.0012	0.	
60,000	.0075	.0013	....	
69,000	.0089	.0014	....	Elastic limit.
70,000	.0096	.0007	.0006	
71,000	.0101	.0005	....	
72,000	.0110	.0009	....	
73,000	.0116	.0006	....	
74,000	.0126	.0010	....	
76,000	.0141	.0015	....	
80,000	.0182	.0041	....	
90,000	.0314	.0132	....	
100,000	.0470	.0156	....	
110,000	.07	.0230	....	
120,000	.09	.02	....	
130,000	.12	.03	....	
140,000	.18	.06	....	
146,800	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of orignal section	pounds..	146,800
Elastic limit per square inch of original section	do...	69,000
Elongation after rupture	inch..	.21
Elongation under strain at elastic limit	do...	.0089
Reduction in diameter at point of rupture	do...	.014
Reduction in area after rupture, per cent of original section		5.0
Position of rupture		".6 from neck
Character of broken surface		fine granular
Elongation of inch sections on stem		".06, ".07, ".07*

No. 7072.

Steel in natural state, from hot rolled bar.
Marks, .73 C.
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0004	.0004	0.	
10,000	.0011	.0007	....	
20,000	.0024	.0013	....	
30,000	.0038	.0014	....	
40,000	.0051	.0013	....	
50,000	.0062	.0011	0.	
60,000	.0077	.0015	....	
68,000	.0090	.0013	....	
69,000	.0092	.0002	....	Elastic limit.
70,000	.0102	.0010	....	
71,000	.0108	.0006	....	
72,000	.0112	.0004	....	
73,000	.0121	.0009	....	
74,000	.0130	.0009	....	
76,000	.0147	.0017	....	
80,000	.0191	.0044	....	
90,000	.0320	.0129	....	
100,000	.0482	.0162	....	
110,000	.07	.0218	....	
120,000	.10	.03	....	
130,000	.13	.03	....	
140,000	.18	.05	....	
142,440	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	142,440
Elastic limit per square inch of original section	do...	69,000
Elongation after rupture	inch..	.16
Elongation under strain at elastic limit	do...	.0092
Reduction in diameter at point of rupture	do...	.014
Reduction in area after rupture, per cent of original section		5.0
Position of rupture		″.7 from neck
Character of broken surface		fine granular
Elongation of inch sections on stem		″.06*, ″.05, ″.04

No. 7117.

Steel in natural state from hot rolled bar, annealed in ashes.
Marks, .73 C.
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0006	.0006	0.	
10,000	.0011	.0005	....	
20,000	.0027	.0016	....	
30,000	.0039	.0012	0.	
40,000	.0052	.0013	....	
50,000	.0067	.0015	.0001	
60,000	.0080	.0013	.0001	
69,000	.0092	.0012	....	Elastic limit.
70,000	.0100	.0008	.0009	
71,000	.0109	.0009	....	
72,000	.0117	.0008	....	
74,000	.0130	.0013	....	
76,000	.0153	.0023	....	
80,000	.0200	.0047	....	
90,000	.04	.02	....	
100,000	.05	.01	....	
110,000	.07	.02	....	
120,000	.10	.03	....	
130,000	.13	.03	....	
133,120	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	133,120
Elastic limit per square inch of original section	do...	69,000
Elongation after rupture	inch..	.12
Elongation under strain at elastic limit	do...	.0092
Reduction in diameter at point of rupture	do...	.014
Reduction in area after rupture, per cent of original section		5.0
Position of rupture		″.8 from neck
Character of broken surface		granular
Elongation of inch sections on stem		″.03, ″.04, ″.04

No. 7111.

Marks, $\overset{.73}{\text{TN}}\ \overset{\text{C}}{\text{EN}}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0005	.0005	0.	
10,000	.0011	.0006		
20,000	.0023	.0012		
30,000	.0038	.0015	0.	
40,000	.0050	.0012		
50,000	.0065	.0015	.0001	
58,000				Elastic limit (approximate).
59,000	.0081	.0016		
60,000	.0092	.0011	.0015	
61,000	.0099	.0007		
62,000	.0102	.0003		
63,000	.0107	.0005		
64,000	.0111	.0004		
66,000	.0127	.0016		
70,000	.0160	.0033		
75,000	.0205	.0045		
80,000	.0270	.0065		
90,000	.05	.0230		
99,760				Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	99,760
Elastic limit per square inch of original section (approximate)	do...	58,000
Elongation after rupture	inch..	.07
Reduction in diameter at point of rupture	do...	.014
Reduction in area after rupture, per cent of original section		5.0
Position of rupture		″.6 from neck
Character of broken surface		granular

No. 7112.

Marks, $\overset{.73\text{ C}}{\text{TN EN}}$.
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0003	.0003	0.	
10,000	.0010	.0007	....	
20,000	.0021	.0011	....	
30,000	.0036	.0015	0.	
40,000	.0050	.0014	....	
50,000	.0061	.0011	0.	
60,000	.0077	.0016	.0001	
62,000	.0080	.0003	....	Elastic limit.
63,000	.0086	.0006	....	
64,000	.0097	.0011	....	
65,000	.0108	.0011	....	
66,000	.0120	.0012	....	
68,000	.0148	.0028	....	
70,000	.0175	.0027	....	
80,000	.03	.0125	....	
90,000	.05	.02	....	
100,000	.07	.02	....	
110,000	.10	.03	....	
116,080	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	116,080
Elastic limit per square inch of original section	do...	62,000
Elongation after rupture	inch..	.11
Elongation under strain at elastic limit	do...	.0080
Reduction in diameter at point of rupture	do...	.014
Reduction in area after rupture, per cent of original section		5.0
Position of rupture		″.56 from neck
Character of broken surface		granular

No. 7073.

Steel in natural state, from hot rolled bar.
Marks, .82 C.
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0004	.0004	0.	
10,000	.0010	.0006	....	
20,000	.0022	.0012	....	
30,000	.0036	.0014	....	
40,000	.0049	.0013	....	
50,000	.0061	.0012	0.	
60,000	.0076	.0015	....	
64,000	.0081	.0005	....	
65,000	.0083	.0002	....	Elastic limit.
66,000	.0109	.0026	....	
67,000	.0121	.0012	....	
68,000	.0132	.0011	....	
70,000	.0156	.0014	....	
75,000	.0214	.0058	....	
80,000	.0270	.0056	....	
90,000	.05	.0230	....	
100,000	.07	.02	....	
110,000	.09	.02	....	
120,000	.11	.02	....	
130,000	.14	.03	....	
140,000	.22	.08	....	
143,200	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	143,200
Elastic limit per square inch of original section	do	65,000
Elongation after rupture	inch	.27
Elongation under strain at elastic limit	do	.0083
Reduction in diameter at point of rupture	do	.034
Reduction in area after rupture, per cent of original section		11.8
Position of rupture		″.85 from neck
Character of broken surface		fine granular
Elongation of inch sections on stem		″.07, ″.08, ″.11*

No. 7074.

Steel in natural state, from hot rolled bar.
Marks, .82 C.
Diameter, ".564.
Sectional area, .25 square inch.
Gauged length on heads, 4".

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0005	.0005	0.	
10,000	.0012	.0007	....	
20,000	.0027	.0015	....	
30,000	.0041	.0014	....	
40,000	.0056	.0015	....	
50,000	.0070	.0014	0.	
60,000	.0082	.0012	....	
63,000	.0086	.0004	....	Elastic limit.
64,000	.0092	.0006	....	
65,000	.0099	.0007	....	
66,000	.0113	.0014	....	
68,000	.0140	.0027	....	
70,000	.0163	.0023	....	
75,000	.0202	.0039	....	
80,000	.0275	.0073	....	
90,000	.05	.0225	....	
100,000	.07	.02	....	
110,000	.09	.02	....	
120,000	.10	.01	....	
130,000	.14	.04	....	
140,000	.20	.06	....	
144,400	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	144,400
Elastic limit per square inch of original section	do...	63,000
Elongation after rupture	inch..	.29
Elongation under strain at elastic limit	do...	.0086
Reduction in diameter at point of rupture	do...	.034
Reduction in area after rupture, per cent of original section		11.8
Position of rupture		1".1 from neck
Character of broken surface		fine granular
Elongation of inch sections on stem		".10*, ".11*, ".07

No. 7118.

Steel in natural state, from hot rolled bar, annealed in ashes.
Marks, .82 C.
Diameter, ".564.
Sectional area, .25 square inch.
Gauged length on heads, 4".

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0002	.0002	0.	
10,000	.0010	.0008	....	
20,000	.0023	.0013	....	
30,000	.0038	.0015	....	
40,000	.0050	.0012	....	
50,000	.0062	.0012	0.	
60,000	.0076	.0014	0.	
68,000	.0091	.0015	....	
69,000	.0093	.0002	....	Elastic limit.
70,000	.0104	.0011	.0008	
71,000	.0112	.0008	....	
72,000	.0121	.0009	....	
74,000	.0143	.0022	....	
76,000	.0170	.0027	....	
80,000	.0220	.0050	....	
90,000	.04	.0180	....	
100,000	.05	.01	....	
110,000	.07	.02	....	
120,000	.10	.03	....	
130,000	.13	.03	....	
137,640	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	137,640
Elastic limit per square inch of original section	do...	69,000
Elongation after rupture	inch..	.14
Elongation under strain at elastic limit	do...	.0093
Reduction in diameter at point of rupture	do...	.014
Reduction in area after rupture, per cent of original section		5.0
Position of rupture		1".04 from neck
Character of broken surface		granular
Elongation of inch sections on stem		".04*, ".05*, ".04

No. 7113.

Marks, $\overset{.82\ \mathrm{C}}{\mathrm{TN\ EN}}$
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0006	.0006	0.	
10,000	.0013	.0007	....	
20,000	.0028	.0015	....	
30,000	.0041	.0013	0.	
40,000	.0055	.0014	....	
50,000	.0070	.0015	.0001	
58,000	....	....	....	Elastic limit (approximate).
60,000	.0092	.0022	.0010	
62,000	.0099	.0007	....	
64,000	.0107	.0008	....	
66,000	.0112	.0005	....	
68,000	.0121	.0009	....	
70,000	.0132	.0011	.0035	
75,000	.0163	.0031	....	
80,000	.0219	.0056	....	
90,000	.04	.0181	....	
100,000	.05	.01	....	
106,880	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section........pounds..	106,880
Elastic limit per square inch of original section (approximate)........do...	58,000
Elongation after rupture........inch..	.05
Reduction in diameter at point of rupture........do...	.014
Reduction in area after rupture, per cent of original section........	5.0
Position of rupture........	at the neck
Character of broken surface........	granular

No. 7114.

Marks, $\overset{.82\ \mathrm{C}}{\mathrm{TN\ EN}}$
Diameter, ".564.
Sectional area, .25 square inch.
Gauged length on heads, 4".

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0006	.0006	0.	
10,000	.0011	.0005	....	
20,000	.0022	.0011	....	
30,000	.0037	.0015	0.	
40,000	.0050	.0013	....	
50,000	.0062	.0012	0.	
54,000	.0070	.0008	....	Elastic limit.
56,000	.0080	.0010	....	
58,000	.0111	.0031	....	
60,000	.0132	.0021	.0050	
62,000	.0150	.0018	....	
64,000	.0172	.0022	....	
66,000	.0200	.0028	....	
70,000	.0250	.0050	....	
80,000	.04	.0150	....	
90,000	.06	.02	....	
119,200	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	119,200
Elastic limit per square inch of original section	do...	54,000
Elongation after rupture	inch..	.07
Elongation under strain at elastic limit	do...	.0070
Reduction in diameter at point of rupture	do...	.014
Reduction in area after rupture, per cent of original section		5.0
Position of rupture		at the neck
Character of broken surface		granular

No. 7075.

Steel in natural state, from hot rolled bar.
Marks, 1.09 C.
Diameter, ".564.
Sectional area, .25 square inch.
Gauged length on heads, 4".

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0005	.0005	0.	
10,000	.0011	.0006	....	
20,000	.0025	.0014	....	
30,000	.0039	.0014	....	
40,000	.0052	.0013	....	
50,000	.0066	.0014	0.	
60,000	.0079	.0013	....	
70,000	.0098	.0019	....	
72,000	.0102	.0004	....	Elastic limit.
73,000	.0280	.0178	....	
74,000	.0290	.0010	....	
76,000	.0310	.0020	....	
80,000	.0360	.0050	....	
90,000	.06	.0240	....	
100,000	.07	.01	....	
110,000	.09	.02	....	
120,000	.12	.03	....	
129,600	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	129,600
Elastic limit per square inch of original section	do...	72,000
Elongation after rupture	inch..	.12
Elongation under strain at elastic limit	do...	.0102
Reduction in diameter at point of rupture	do...	.014
Reduction in area after rupture, per cent of original section		5.0
Position of rupture		".45 from neck
Character of broken surface		fine granular
Elongation of inch sections on stem		".05*, ".03, ".03

No. 7076.

Steel in natural state, from hot rolled bar.
Marks, 1.09 C.
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0005	.0005	0.	
10,000	.0011	.0006	....	
20,000	.0026	.0015	....	
30,000	.0039	.0013	....	
40,000	.0052	.0013	....	
50,000	.0066	.0014	0.	
60,000	.0079	.0013	....	
70,000	.0095	.0016	....	
72,000	.0098	.0003	....	Elastic limit.
73,000	.0300	.0202	....	
74,000	.0306	.0006	....	
75,000	.0314	.0008	....	
76,000	.0320	.0006	....	
80,000	.0370	.0050	....	
90,000	.06	.0230	....	
100,000	.08	.02	....	
110,000	.09	.01	....	
120,000	.12	.03	....	
126,800	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	126,800
Elastic limit per square inch of original section	do...	72,000
Elongation after rupture	inch..	.10
Elongation under strain at elastic limit	do...	.0098
Reduction in diameter at point of rupture	do...	.014
Reduction in area after rupture, per cent of original section		5.0
Position of rupture		″.35 from neck
Character of broken surface		fine granular
Elongation of inch sections on stem		″.03, ″.04, ″.03*

No. 7119.

Steel in natural state, from hot rolled bar, annealed in ashes.
Marks, 1.09 C.
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0005	.0005	0.	
10,000	.0012	.0007		
20,000	.0025	.0013		
30,000	.0039	.0014		
40,000	.0050	.0011		
50,000	.0064	.0014	0.	
60,000	.0079	.0015		
70,000	.0090	.0011	0.	
73,000	.0096	.0006		
74,000	.0098	.0002		Elastic limit.
75,000	.0350	.0252		
76,000	.0361	.0011		
78,000	.0372	.0011		
80,000	.0400	.0028		
90,000	.06	.02		
100,000	.08	.02		
110,000	.10	.02		
118,400				Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	118,400
Elastic limit per square inch of original section	do...	74,000
Elongation after rupture	inch..	.09
Elongation under strain at elastic limit	do...	.0098
Reduction in diameter at point of rupture	do...	.014
Reduction in area after rupture, per cent of original section		5.0
Position of rupture		″.15 from neck
Character of broken surface		fine granular
Elongation of inch sections on stem		″.03*, ″.03, ″.02

No. 7115.

Marks, $\overset{\text{1.09 C}}{\text{TN EN}}$
Diameter, ".564.
Sectional area, .25 square inch.
Gauged length on heads, 4".

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0003	.0003	0.	
10,000	.0011	.0008	....	
20,000	.0024	.0013	....	
30,000	.0038	.0014	0.	
40,000	.0051	.0013	....	
50,000	.0064	.0013	0.	
60,000	.0079	.0015	....	
70,000	.0091	.0012	0.	
80,000	.0107	.0016	0.	
89,000	....	....	....	Elastic limit (approximate).
90,000	.0124	.0017	.0006	
92,000	.0132	.0008	....	
94,000	.0141	.0009	....	
96,000	.0155	.0014	....	
98,000	.0168	.0013	....	
100,000	.0187	.0019	.0013	
110,000	.03	.0113	....	
116,400	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	116,400
Elastic limit per square inch of original section (approximate)	do...	89,000
Elongation after rupture	inch..	.03
Reduction in diameter at point of rupture	do...	.014
Reduction in area after rupture, per cent of original section		5.0
Position of rupture		at the neck
Character of broken surface		fine granular

No. 7116.

Marks, $\overset{1.09\ C}{\text{TN EN}}$.
Diameter, ″.564.
Sectional area, 25 square inch.
Gauged length on heads, 4″.

Applied loads per square inch.	In gauged length.			Remarks.
	Elongation.	Successive elongation.	Set.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	Initial load.
5,000	.0004	.0004	0.	
10,000	.0011	.0007	....	
20,000	.0023	.0012	....	
30,000	.0039	.0016	0.	
40,000	.0052	.0013	....	
50,000	.0065	.0013	....	
60,000	.0079	.0014	....	
70,000	.0094	.0015	.0001	
78,000	....	....	....	Elastic limit, approximate.
80,000	.0115	.0021	.0011	
82,000	.0130	.0015	....	
84,000	.0148	.0018	....	
86,000	.0163	.0015	....	
90,000	.0222	.0059	.0091	
100,000	.04	.0178	....	
110,000	.05	.01	....	
113,200	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	113,200
Elastic limit per square inch of original section (approximate)............do...	78,000
Elongation after rupture............inch..	.04
Reduction in diameter at point of rupture............do...	.004
Reduction in area after rupture, per cent of original section	1.5
Position of rupture	at the neck
Character of broken surface	fine, silky

CASE-HARDENING EXPERIMENTS WITH STEEL BARS.

TABULATION OF TENSION TESTS.

No. of test.	Marks.	Diameter.	Sectional area.	Elastic limit per square inch.	Tensile strength per square inch.	Elongation in 4 inches on heads.	Contraction of area.	Appearance of fracture.	Elongation of inch sections on stem.	Remarks.
		Inch.	*Sq. inch.*	*Pounds.*	*Pounds.*	*Inches.*	*Per cent.*		″ ″ ″	
7041	.16 C	.564	.25	43,200	58,840	1.04	63.7	Fine silky		Steel in natural state turned down from hot-rolled bar.
7042	.16 C	.564	.25	46,000	60,960	1.14	65.8	do	.32, .54*, .23	Do.
7043	.16 C	.564	.25	45,000	60,720	1.02	65.8	do	.28, .49*, .21	Do.
7056	.16 C TN EN	.564	.25	40,000	55,200	1.11	61.5	Silky	.37, .48*, .23	Heated in lime, not casehardened.
7057	.16 C TN EN	.564	.25	39,000	55,280	1.10	63.7	Fine silky, cup shaped	.25, .59*, .24	Do.
7058	.16 C TN EN	.564	.25	38,000	54,880	1.10	61.5	do	.24, .59*, .24	Do.
7059	.16 C TL EN	.564	.25	43,000	55,600	1.09	61.5	do	.24, .59*, .23	Do.
7060	.16 C TL EN	.564	.25	40,000	55,200	1.09	63.7	do	.24, .60*, .22	Do.
7061	.16 C TL EN	.564	.25	43,000	55,240	1.09	65.8	do	.24, .59*, .23	Do.
7090	.16 C TN EN	.564	.25	[1]48,000	83,720	.69	49.7	Silky, opened cracks in surface of stem		
7091	.16 C TN EN	.564	.25	55,000	81,680	.65	52.2	Silky, opened minute cracks in stem		
7092	.16 C TN EN	.564	.25	49,000	84,120	.63	52.2	Silky oblique, opened cracks along stem		
7054	.16 C TN EP	.564	.25	[1]44,000	83,680	.67	44.6	do		
7093	.16 C TN EP	.564	.25	47,000	82,680	.63	47.2	do		
7094	.16 C TL EN	.564	.25	[1]46,000	83,600	.63	54.6	do		
7095	.16 C TL EN	.564	.25	49,000	82,400	.67	54.6	do		
7055	.16 C TL EP	.564	.25	[1]37,000	82,000	.65	41.9	do		
7096	.16 C TL EP	.564	.25	47,000	82,640	.64	52.2	Silky, opened cracks along the stem		
7097	.16 C TL EP	.564	.25	46,000	82,480	.65	49.7	do		

[1] Approximate.

CASE-HARDENING EXPERIMENTS WITH STEEL BARS—Continued.

TABULATION OF TENSION TESTS—Continued.

No. of test.	Marks.	Diameter.	Sectional area.	Elastic limit per square inch.	Tensile strength per square inch.	Elongation in 4 inches on heads.	Contraction of area.	Appearance of fracture.	Elongation of inch sections on stem.	Remarks.
		Inch.	*Sq. inch.*	*Pounds.*	*Pounds.*	*Inches.*	*Per cent.*		″ ″ ″	
7029	.16 C TN EN	.588 .300	.20	39,000	89,000	.51	....	Silky, opened cracks along the stem	....	
7030	.16 C TN EN	.588 .300	.20	49,000	89,100	.56	....	....do	....	
7031	.16 C TN EN	.588 .300	.20	54,000	87,550	.61	....	....do	....	
7032	.16 C TN EP	.588 .300	.20	49,000	96,000	.43	....	Silky, 50 per cent; granular, 50 per cent; cracks along the stem very pronounced.	....	
7033	.16 C TN EP	.588 .300	.20	48,000	91,550	.47	....	Silky, opened cracks in surface of stem.	....	
7034	.16 C TN EP	.588 .300	.20	[1]47,000	89,050	.54	....	....do	....	
7035	.16 C TL EN	.588 .300	.20	[1]39,000	93,100	.51	....	Silky, 50 per cent; granular, 50 per cent; opened cracks in stem.	....	
7036	.16 C TL EN	.588 .300	.20	65,000	86,000	.57	....	Silky	....	Surface not hardened, can be filed.
7037	.16 C TL EN	.588 .300	.20	49,000	91,500	.60	....	....do	....	
7038	.16 C TL EP	.588 .300	.20	39,000	90,100	.49	....	Granular, 80 per cent; silky, 20 per cent; opened cracks in stem.	....	
7039	.16 C TL EP	.588 .300	.20	[1]44,000	89,500	.43	....	Silky, 80 per cent; granular, 20 per cent; opened cracks in stem.	....	
7040	.16 C TL EP	.588 .300	.20	40,000	87,100	.35	....	Granular, 90 per cent; silky, 10 per cent; opened cracks in stem.	....	
7044	.34 C	.564	.25	54,000	85,000	.79	52.2	Silky	.17, .44*, .16	Steel in natural state, turned down from hot-rolled bar.
7045	.34 C	.564	.25	53,000	85,000	.81	52.2	Fine silky	.17, .44*, .18	Do.
7046	.34 C	.564	.25	53,000	84,880	.80	52.2	....do	.17, .44*, .17	Do.
7062	.34 C TN EN	.564	.25	48,000	80,720	.81	47.2	....do	.17, .39*, .23	Heated in lime, not casehardened.
7063	.34 C TN EN	.564	.25	50,000	81,600	.77	49.7	....do	.15, .22, .37*	Do.
7064	.34 C TN EN	.564	.25	49,000	80,400	.81	47.2	....do	.20, .42*, .16	Do.
7065	.34 C TL EN	.564	.25	49,000	79,200	.89	54.6	....do	.20, .47*, .19	Do.

7066	.34 C TL EN	.564	.25	48,000	78,880	.87	54.6	.....do	.19, .47*, .19	Do.
7067	.34 C TL EN	.564	.25	48,000	78,960	.88	54.6	.....do	.22, .45*, .18	Do.
7047	.34 C TN EN	.564	.25	[1]87,000	106,400	.52	24.6	Granular, radiating from a silky spot at the circumference; opened cracks in stem.		
7048	.34 C TN EN	.564	.25	[1]36,000	106,840	.44	18.8	Granular, radiating from a point in circumference; opened cracks in stem.		
7049	.34 C TN EN	.564	.25	50,000	86,080	.66	39.2	Silky, oblique; opened cracks in stem		
7050	.34 C TN EP	.564	.25	[1]42,000	98,040	.55	33.5	Granular, 70 per cent; silky, 30 per cent; opened cracks in stem.		
7051	.34 C TN EP	.564	.25	38,000	108,200	.33	11.8	Granular, opened cracks in stem		
7098	.34 C TN EP	.564	.25	39,000	106,800	.49	21.4	Granular, radiating from a point in circumference.		
7052	.34 C TL EN	.564	.25	[1]48,000	85,920	.70	41.9	Silky, oblique; opened cracks in stem		
7099	.35 C TL EN	.564	.25	[1]44,000	98,400	.52	36.4	Granular, 60 per cent; silky oblique, 40 per cent.		
7053	.34 C TL EP	.564	.25	[1]34,000	104,400	.17	5.0	Granular, opened cracks in stem		
7100	.34 C TL EP	.564	.25	[1]39,000	106,880	.45	21.4	Granular, radiating from a point in circumference; very pronounced cracks; opened in stem.		
7101	.34 C TN EN	.588 .300	.20	60,000	91,000	.67		Silky, opened cracks in stem		The surface of this specimen could be marked with a file, but with difficulty.
7102	.34 C TN EN	.588 .300	.20	44,000	107,000	.30		Granular		
7103	.34 C TN EP	.588 .300	.20	[1]38,000	111,000	.18		Granular, opened cracks in stem		
7104	.34 C TN EP	.588 .800	.20	39,000	102,000	.09		.....do		
7105	.34 C TL EN	.588 .800	.20	38,000	107,250	.09		.....do		
7106	.34 C TL EN	.588 .800	.20	[1]38,000	109,900	.19		.....do		
7107	.34 C TL EP	.588 .800	.20	[1]38,000	109,950	.15		.....do		
7108	.34 C TL EP	.588 .800	.20	[1]38,000	104,500	.05		Granular		
7068	.55 C	.564	.25	59,000	109,920	.55	33.5	Silky, interspersed with fine granulation.	.13, .28*, .12	Steel in natural state, turned down from hot-rolled bar.
7069	.55 C	.564	.25	58,000	109,640	55	33.5	.....do	.16, .25*, .12	Do.
7070	.55 C	.564	.25	58,000	109,680	.55	33.5	.....do	.14, .28*, .11	Do.
7109	.55 C TN EN	.564	.25	[1]77,000	127,600	.09	5.0	Granular		

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[1] Approximate.

CASE-HARDENING EXPERIMENTS WITH STEEL BARS—Continued.

TABULATION OF TENSION TESTS—Continued.

No. of test.	Marks.	Diameter.	Sectional area.	Elastic limit per square inch.	Tensile strength per square inch.	Elongation in 4 inches on heads.	Contraction of area.	Appearance of fracture.	Elongation of inch sections on stem.	Remarks.
		Inch.	*Sq. inch.*	*Pounds.*	*Pounds.*	*Inches.*	*Per cent.*		" " "	
7110	.55 C TN EN	.564	.25	[1]67,000	125,200	.13	5.0	Granular	....	
7071	.73 C	.564	.25	69,000	146,800	.21	5.0	Fine granular	.06, .07, .07*	Steel in natural state, turned down from hot-rolled bar.
7072	.73 C	.564	.25	69,000	142,440	.16	5.0	.....do	.06*, .05, .04	Do.
7117	.73 C	.564	.25	69,000	133,120	.12	5.0	Granular	.03, .04, .04*	Steel in natural state from hot-rolled bar, annealed in ashes.
7111	.73 C TN EN	.564	.25	[1]58,000	99,760	.07	5.0	.....do	....	
7112	.73 C TN EN	.564	.25	62,000	116,080	.11	5.0	.....do	....	
7073	.82 C	.564	.25	65,000	143,200	.27	11.8	Fine granular	.07, .08, .11*	Steel in natural state from hot-rolled bar.
7074	.82 C	.564	.25	63,000	144,400	.29	11.8	.....do	.10*, .11*, .07	Do.
7118	.82 C	.564	.25	69,000	137,640	.14	5.0	Granular	.04*, .05*, .04	Steel in natural state from hot-rolled bar, annealed in ashes.
7113	.82 C TN EN	.564	.25	[1]58,000	106,880	.05	5.0	....do	....	
7114	.83 C TN EN	.564	.25	54,000	119,200	.07	5.0	....do	....	
7075	1.09 C	.564	.25	72,000	129,600	.12	5.0	Fine granular	.05*, .03, .03	Steel in natural state from hot-rolled bar.
7076	1.09 C	.564	.25	72,000	126,800	.10	5.0	.....do	.03, .04, .03*	Do.
7119	1.09 C	.564	.25	74,000	118,400	.09	5.0	.....do	.03*, .03, .02	Steel in natural state from hot-rolled bar, annealed in ashes.
7115	1.09 C TN EN	.564	.25	[1]89,000	116,400	.03	5.0	....do	....	
7116	1.09 C TN EN	.564	.25	[1]78,000	113,200	.04	1.5	Fine silky	....	

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[1] Approximate.

COMPRESSION TESTS.

No. 1168.

Marks, $\overset{.16\ \mathrm{C}}{\mathrm{TN\ ET}}$.
Diameter, 1″.200.
Sectional area, 1.131 square inches.
Length over all, 6″.
Gauged length, 4″.

Applied loads per square inch.	Compression per inch.	Successive compression per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000125	.000125	.000025	.000025	
10,000	.000475	.000350	.000050	.000025	
20,000	.000850	.000375	.000075	.000025	
30,000	.001375	.000525	.000350	.000275	
35,000	.001725	.000350	.000525	.000175	
40,000	.002100	.000375	.000800	.000275	
45,000	.002825	.000725	.001350	.000550	
50,000	.0175	.014675	....	....	
55,000	.0250	.0075	....	....	
60,000	.0350	.0100	....	....	
79,660	....	....	....	....	Ultimate strength.

Failed by triple flexure. Bent 180° and closed down without upture.

No. 1169.

Marks, $\overset{.34\ \mathrm{C}}{\mathrm{TN\ EP}}$.
Diameter, 1″.200.
Sectional area, 1.131 square inches.
Length over all, 6″.
Gauged length, 4″.

Applied loads per square inch.	Compression per inch.	Successive compression per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000125	.000125	0.	....	
10,000	.000300	.000175	0.	....	
20,000	.000575	.000275	0.	....	
30,000	.001025	.000450	.000025	.000025	
40,000	.001575	.000550	.000400	.000375	
45,000	.002050	.000475	.000675	.000275	
50,000	.002850	.000800	.001225	.000550	
55,000	.0150	.012150	....	....	
60,000	.0200	.0050	....	....	
89,890	....	....	....	....	Ultimate strength.

Failed by triple flexure. Bent 170°; then ruptured in the quarter by a shearing fracture beginning at the inside of the bend.

No. 1170.

Marks, .55 C TN EP
Diameter, 1″.200.
Sectional area, 1.131 square inches.
Length over all, 6″.
Gauged length, 4″.

Applied loads per square inch.	Compression per inch.	Successive compression per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000150	.000150	0.	....	
10,000	.000300	.000150	0.	....	
20,000	.000600	.000300	0.	....	
30,000	.000900	.000300	0.	....	
40,000	.001425	.000525	.000200	.000200	
45,000	.001750	.000325	.000325	.000125	
50,000	.002300	.000550	.000650	.000325	
55,000	.006575	.004275	.005275	.004625	
60,000	.0075	.000925	....	....	
111,050	....	....	....	....	Ultimate strength.

Failed by triple flexure. Bent 130°, and then fractured, beginning on the tension side of the bend. Opened numerous fine cracks on the tension side.

No. 1171.

Marks, .73 C TN EP
Diameter, 1″.200.
Sectional area, 1.131 square inches.
Length over all, 6″.
Gauged length, 4″.

Applied loads per square inch.	Compression per inch.	Successive compression per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000075	.000075	0.	....	
10,000	.000275	.000200	0.	....	
20,000	.000600	.000325	0.	....	
30,000	.000950	.000350	0.	....	
40,000	.001325	.000375	.000050	.000050	
45,000	.001550	.000225	.000150	.000100	
50,000	.001850	.000300	.000275	.000125	
55,000	.002225	.000375	.000425	.000150	
60,000	.002975	.000750	.000950	.000525	
131,650	....	....	....	....	Ultimate strength.

Failed by triple flexure. Bent 30°. Fractured at the middle of length. Granular on the tension side; smooth, lustrous on the compression side. Opened a tension fracture ¼″ from the end of the specimen.

No. 1172.

Marks, $\overset{.82\text{ C}}{\text{TN EP}}$
Diameter, 1".200.
Sectional area, 1.131 square inches.
Length over all, 6".
Gauged length, 4".

Applied loads per square inch.	Compression per inch.	Successive compression per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000100	.000100	0.	0.	
10,000	.000275	.000175	0.	0.	
20,000	.000625	.000350	0.	0.	
30,000	.001000	.000375	.000075	.000075	
35,000	.001200	.000200	.000150	.000075	
40,000	.001425	.000225	.000225	.000075	
45,000	.001725	.000300	.000300	.000075	
50,000	.002025	.000300	.000450	.000150	
55,000	.002575	.000550	.000800	.000350	
60,000	.004325	.001750	.002150	.001350	
130,150	....	....	....	....	Ultimate strength.

Failed by triple flexure. Bent about 20°, and then fractured from the tension side, with a granular appearance. Smooth lustrous next the compression side of the bend.

No. 1173.

Marks, $\overset{1.09\text{ C}}{\text{TN EP}}$
Diameter, 1".200.
Sectional area, 1.131 square inches.
Length over all, 6".
Gauged length, 4".

Applied loads per square inch.	Compression per inch.	Successive compression per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000125	.000125	0.	....	
10,000	.000300	.000175	.000025	.000025	
20,000	.000675	.000375	.000050	.000025	
30,000	.000975	.000300	.000075	.000025	
35,000	.001200	.000225	.000075	0.	
40,000	.001375	.000175	.000100	.000025	
45,000	.001550	.000175	.000175	.000075	
50,000	.001825	.000275	.000250	.000075	
55,000	.002100	.000275	.000350	.000100	
60,000	.002500	.000400	.000550	.000200	
139,080	....	....	....	....	Ultimate strength.

Failed by triple flexure. Bent about 20°, and then fractured from the tension side, with a granular appearance.

RESISTANCE OF JACKETED BULLETS WHEN FORCED THROUGH THE BORE OF .30-CALIBER PRESSURE BARRELS.

Experiments were made with two barrels of different diameters of the bore, marked Nos. 3 and 5, respectively, and with three kinds of bullets.

Two kinds of bullets were of the service type, measuring ".307 and ".308 in diameter, respectively, and an experimental 3-banded bullet measuring ".304 in diameter at the front bearing.

The bullets were forced through the barrels without any lubricant, the experiments following each other in the order of the numbers of the tests. A new bullet was used in each experiment.

Pressures were applied to the base of the bullets by means of pistons nearly filling the bore of the barrel, pistons of different lengths were employed, and the tests interrupted when the stroke of a given piston was exhausted.

The time when the pistons were changed is noted in the details of the tests.

The bullets took the rifling of the barrels with fairly smooth cuts in the early tests of each barrel. In the subsequent experiments the bullets showed rougher abraded surfaces, and greater resistances in forcing the bullets through the barrels were encountered in such cases.

BARRELS AND BULLETS RECEIVED FROM FRANKFORD ARSENAL.

Barrel No. 3, ".3079 diameter at bottom of grooves.
Barrel No. 5, ".311 diameter at bottom of grooves.
Service bullets, { ".308 maximum diameter. ".307 minimum diameter.
Experimental 3-band bullets, ".304 diameter, front bearing.

BARREL No. 3.

Total travel of bullet.	Resistance.			Remarks.
	No. 9875.	No. 9876.	No. 9877.	
	Bullet, ".307 diameter.	Bullet, ".308 diameter.	3-band bullet, ".304 diameter.	
Inches.	*Pounds.*	*Pounds.*	*Pounds.*	
.10	165	201	13	
.20	272	366	81	
.30	321	524	65	
.40	450	636	85	
.50	584	855	102	
.60	730	1,202	199	
.68	766	....	....	
.70	748	1,262	192	
.80	754	1,289	167	
.90	738	1,122	151	
1.00	734	1,104	155	
1.10	736	1,076	149	
1.20	738	1,046	146	
1.30	738	1,026	138	
1.50	732	998	135	
1.70	730	954	129	
2.00	708	938	126	
2.50	648	904	125	
3.00	593	874	117	
3.50	562	846	109	
4.00	510	790	105	
5.00	479	726	100	
6.00	468	710	99	
7.00	487	750	91	
7.90	484	778	81	
				Changed pistons.
8.00	470	780	119	
9.00	495	752	116	
10.00	477	708	120	
11.00	487	772	120	
12.00	469	736	115	
13.00	430	692	118	
14.00	370	614	120	
15.00	364	556	118	
16.00	347	560	117	
17.00	389	634	118	
				Changed pistons.
18.00	415	704	126	
19.00	397	694	129	
20.00	374	665	125	
21.00	371	694	122	
22.00	385	718	123	
23.00	348	620	122	
24.00	330	558	123	
25.00	320	523	128	
26.00	345	619	126	
27.00	392	718	126	
27.60	....	760	80	

DUPLICATE TESTS WITH BARREL No. 3.

Total travel of bullet.	Resistance.			Remarks.
	No. 9878.	No. 9879.	No. 9880.	
	Bullet ″.307 diameter.	Bullet ″.308 diameter.	3-band bullet, ″.304 diameter.	
Inches.	*Pounds.*	*Pounds.*	*Pounds.*	
.10	168	149	76	
.20	281	302	87	
.30	376	436	79	
.40	502	576	144	
.50	656	730	217	
.60	724	959	205	
.70	896	987	197	
.80	882	1,002	192	
.90	827	1,004	196	
1.00	843	1,027	187	
1.20	848	1,068	199	
1.50	878	1,140	187	
2.00	839	1,180	192	
2.50	780	1,102	188	
3.00	668	954	169	
4.00	605	812	174	
5.00	559	667	160	
6.00	530	614	135	
7.00	560	638	135	
				Changed pistons
8.00	552	658	130	
9.00	554	620	124	
10.00	523	592	116	
12.00	550	604	110	
14.00	452	498	112	
16.00	405	465	107	
17.00	478	523	108	
				Changed pistons.
18.00	542	560	98	
20.00	510	524	99	
22.00	564	554	98	
24.00	420	466	87	
26.00	470	488	97	
27.50	584	....	98	
27.60	....	597	....	

BARREL No. 5. ".311 DIAMETER AT BOTTOM OF GROOVES.

Total travel of bullet.	Resistance.			Remarks.
	No. 9881.	No. 9882.	No. 9883.	
	Bullet ".307 diameter.	Bullet ".308 diameter.	3-band bullet, ".304 diameter.	
Inches.	*Pounds.*	*Pounds.*	*Pounds.*	
.10	172	164	89	
.20	254	302	76	
.30	352	452	73	
.40	450	581	132	
.50	590	696	196	
.60	763	924	181	
.70	839	961	182	
.80	861	978	179	
.90	824	978	179	
1.00	838	949	186	
1.20	794	943	179	
1.50	764	918	178	
2.00	754	896	156	
2.50	692	851	153	
3.00	670	838	147	
4.00	573	770	150	
5.00	486	696	154	
6.00	478	678	153	
7.00	455	646	143	
				Changed pistons.
8.00	473	648	142	
9.00	465	670	138	
10.00	462	625	128	
12.00	496	698	127	
14.00	392	545	127	
16.00	397	523	131	
17.00	384	513	131	
				Changed pistons.
18.00	390	530	133	
20.00	392	556	140	
22.00	431	598	137	
24.00	341	471	138	
26.00	306	450	132	
27.20	....	....	134	
27.40	396	....	....	
27.45	....	522	....	

BARREL No. 5. ".311 DIAMETER AT BOTTOM OF GROOVES.

[Duplicate tests.]

Total travel of bullet.	Resistance.			Remarks.
	No. 9884.	No. 9885.	No. 9886.	
	Bullet ".307 diameter.	Bullet ".308 diameter.	3-band bullet, ".304 diameter.	
Inches.	*Pounds.*	*Pounds.*	*Pounds.*	
.10	135	184	73	
.20	224	281	74	
.30	319	390	70	
.40	420	508	110	
.50	542	626	202	
.60	748	852	182	
.70	819	960	194	
.80	866	928	186	
.90	898	946	186	
1.00	896	965	185	
1.20	904	1,029	186	
1.50	965	1,074	202	
2.00	910	1,159	220	
2.50	796	924	204	
3.00	724	853	205	
4.00	626	685	183	
5.00	576	582	167	
6.00	550	546	159	
7.00	535	549	152	
				Changed pistons.
8.00	568	542	139	
9.00	580	562	128	
10.00	560	543	113	
12.00	658	604	116	
14.00	508	496	113	
16.00	456	416	105	
17.00	457	428	108	
				Changed pistons.
18.00	496	460	107	
20.00	503	456	109	
22.00	530	510	110	
24.00	432	381	111	
26.00	427	392	107	
27.22	....	....	107	
27.25	....	470	....	
27.35	517	....	....	

BARREL No. 5.—BULLETS FORCED THROUGH AT HIGHER RATES OF SPEED.

No. of test.	Description of bullet.	Maximum resistance.	Total travel of bullet at time of maximum resistance.
		Pounds.	*Inches.*
9887	Service, ".307 diameter	1,650	2.35
9888	Service, ".308 diameter	2,340	2.12
9889	3 bands, ".304 diameter	292	3.40
9890	Service, ".307 diameter	2,750	Disabled the piston.

BARREL No. 5.—BULLETS FORCED THROUGH AT LOW RATES OF SPEED.

Total travel of bullet.	Resistance.		Remarks.
	No. 9891.	No. 9892.	
	Bullet ".307 diameter.	3-band bullet, ".304 diameter.	
Inches.	*Pounds.*	*Pounds.*	
.10	118	65	
.20	218	62	
.30	298	62	
.40	396	127	
.50	544	181	
.60	713	169	
.70	811	157	
.80	878	166	
.90	902	164	
1.00	908	178	
1.20	1,102	216	
1.40	1,380	....	
1.50	1,533	260	
1.90	1,670	....	
2.00	1,660	248	
2.50	2,280	224	
3.00	1,610	211	
			Changed pistons.
3.50	1,344	198	
4.00	985	176	
5.00	532	178	
6.00	502	183	
7.00	516	191	
8.00	654	213	
9.00	647	144	
			Changed pistons.
10.00	514	121	
11.00	598	132	
12.00	576	110	
14.00	356	89	
16.00	331	78	
17.00	384	84	
			Changed pistons.
18.00	434	83	
20.00	395	86	
22.00	418	79	
24.00	267	58	
26.00	282	65	
27.50	382	76	

No. 9893.

BARREL No. 3.—BULLET FORCED THROUGH AT HIGHER RATE OF SPEED.

Description of bullet.	Maximum resistance.	Travel of bullet at time of maximum resistance.
	Pounds.	*Inches.*
Service, ".307 diameter	1,740	1.8

No. 9894.

BARREL No. 3.—SERVICE BULLET ".307 DIAMETER FORCED THROUGH AT LOW RATE OF SPEED.

Total travel of bullet.	Resistance.	Remarks.	Total travel of bullet.	Resistance.	Remarks.
Inches.	*Pounds.*		*Inches.*	*Pounds.*	
.10	135		5.00	1,144	
.20	228		6.00	1,047	
.30	338		7.00	1,098	
.40	487		8.00	1,165	
.50	616		9.00	1,088	
.60	840				Changed pistons.
.70	891		10.00	868	
.80	933		11.00	926	
.90	1,000		12.00	876	
1.00	1,081		14.00	660	
1.20	1,340		16.00	625	
1.50	1,996		17.00	668	
1.64	2,476				Changed pistons.
2.00	2,720		18.00	762	
2.50	2,400		20.00	740	
3.00	2,340		22.00	773	
		Changed pistons.	24.00	542	
3.50	1,740		26.00	537	
4.00	1,490		26.54	696	

STEEL FOR GUN MOUNTS.

SPECIMENS FROM PIVOT SOCKETS, PIVOT YOKES, INNER BASES, OUTER BASES, AXLES, PISTON RODS, AND CASEMATE MOUNTS, FOR 6-POUNDER AND 15-POUNDER MOUNTS.

PIVOT SOCKETS—6-POUNDER GUN MOUNTS.

STEEL CASTINGS.

No. 6453.

Marks, $\overset{\text{A 25}}{\text{P S 6}}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00025	.00015	....	....	
15,000	.00050	.00025	....	....	
20,000	.00060	.00010	....	....	
25,000	.00090	.00030	....	....	
27,000	.00100	.00010	....	....	
28,000	.00105	.00005	....	....	Elastic limit.
29,000	.00840	.00735	....	....	
30,000	.00900	.00060	....	....	
31,000	.01000	.00100	....	....	
32,000	.01100	.00100	....	....	
33,000	.01215	.00115	....	....	
34,000	.01310	.00095	....	....	
35,000	.01450	.00140	....	....	
36,000	.01575	.00125	....	....	
37,000	.01725	.00150	....	....	
38,000	.01850	.00125	....	....	
64,950	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section.....pounds..	64,950
Elastic limit per square inch of original section.....do...	28,000
Elongation per inch after rupture.....inch..	.2550
Elongation per inch under strain at elastic limit.....do...	.00105
Reduction in diameter at point of rupture.....do...	.085
Reduction in area after rupture, per cent of original section.....	30.7
Position of rupture.....	at middle of stem
Character of broken surface.....	silky
Elongation of inch sections.....	".27*, ".24

No. 6454.

Marks, $\frac{\text{A 26}}{\text{P S 6}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00020	.00010	....	....	
15,000	.00050	.00030	....	....	
20,000	.00065	.00015	....	....	
25,000	.00090	.00025	....	....	
28,000	.00105	.00015	....	....	
29,000	.00110	.00005	....	....	
30,000	.00120	.00010	....	....	Elastic limit.
31,000	.01060	.00940	....	....	
32,000	.01195	.00135	....	....	
33,000	.01265	.00070	....	....	
34,000	.01360	.00095	....	....	
35,000	.01525	.00165	....	....	
36,000	.01625	.00100	....	....	
37,000	.01750	.00125	....	....	
38,000	.01900	.00150	....	....	
39,000	.02050	.00150	....	....	
64,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	64,900
Elastic limit per square inch of original section	do...	30,000
Elongation per inch after rupture	inch..	.2250
Elongation per inch under strain at elastic limit	do...	.00120
Reduction in diameter at point of rupture	do...	.075
Reduction in area after rupture, per cent of original section		27.4
Position of rupture		at middle of stem
Character of broken surface		dull silky
Elongation of inch sections		″.23*, ″.22

No. 6455.

Marks, $\overset{A\ 27}{P\ S\ 6}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00005	.00005	....	....	
10,000	.00020	.00015	....	....	
15,000	.00035	.00015	....	....	
20,000	.00055	.00020	....	....	
25,000	.00075	.00020	....	....	
26,000	.00080	.00005	....	....	
27,000	.00095	.00015	....	....	Elastic limit.
28,000	.00825	.00730	....	....	
29,000	.00925	.00100	....	....	
30,000	.00985	.00060	....	....	
31,000	.01010	.00025	....	....	
32,000	.01165	.00155	....	....	
33,000	.01235	.00070	....	....	
34,000	.01385	.00150	....	....	
35,000	.01535	.00150	....	....	
36,000	.01615	.00080	....	....	
37,000	.01775	.00160	....	....	
64,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	64,500
Elastic limit per square inch of original section	do...	27,000
Elongation per inch after rupture	inch..	.2600
Elongation per inch under strain at elastic limit	do...	.00095
Reduction in diameter at point of rupture	do...	.085
Reduction in area after rupture, per cent of original section		30.7
Position of rupture		at middle of stem
Character of broken surface		fine granular 80 per cent, silky 20 per cent
Elongation of inch sections		″.30*, ″.22

No. 6456.

Marks, $\overset{A\ 28}{P\,S\,6}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00030	.00015	....	....	
15,000	.00050	.00020	....	....	
20,000	.00095	.00045	....	....	
21,000	.00100	.00005	....	....	Elastic limit.
22,000	.00275	.00175	....	....	
23,000	.00860	.00585	....	....	
24,000	.00910	.00050	....	....	
25,000	.01000	.00090	....	....	
26,000	.01255	.00255	....	....	
27,000	.01335	.00080	....	....	
28,000	.01610	.00275	....	....	
29,000	.01800	.00190	....	....	
30,000	.01950	.00150	....	....	
31,000	.02225	.00275	....	....	
52,350	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	52,350
Elastic limit per square inch of original section	do	21,000
Elongation per inch after rupture	inch	.3650
Elongation per inch under strain at elastic limit	do	.00100
Reduction in diameter at point of rupture	do	.185
Reduction in area after rupture, per cent of original section		59.8
Position of rupture		1".50 from neck
Character of broken surface		silky
Elongation of inch sections		".29, ".44*

No. 6473.

Marks, $\overset{A\ 28}{2\ P\ S\ 6}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
15,000	.00050	.00020	....	....	
20,000	.00070	.00020	....	....	Elastic limit.
21,000	.00180	.00110	....	....	
22,000	.00200	.00020	....	....	
23,000	.00275	.00075	....	....	
24,000	.00375	.00100	....	....	
25,000	.01150	.00775	....	....	
26,000	.01350	.00200	....	....	
27,000	.01525	.00175	....	....	
28,000	.01625	.00100	....	....	
29,000	.01950	.00325	....	....	
30,000	.02125	.00175	....	....	
51,450	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	51,450
Elastic limit per square inch of original section	do...	20,000
Elongation per inch after rupture	inch..	.2950
Elongation per inch under strain at elastic limit	do...	.00070
Reduction in diameter at point of rupture	do...	.115
Reduction in area after rupture, per cent of original section		40.3
Position of rupture		".95 from neck
Character of broken surface		silky
Elongation of inch sections		".35*, ".24

No. 6457.

Marks, $\overset{\text{A 29}}{\text{P S 6}}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00025	.00015	....	....	
15,000	.00050	.00025	....	....	
18,000	.00065	.00015	....	....	
19,000	.00075	.00010	....	....	Elastic limit.
20,000	.00105	.00030	....	....	
21,000	.00150	.00045	....	....	
22,000	.00240	.00090	....	....	
23,000	.00815	.00575	....	....	
24,000	.00935	.00120	....	....	
25,000	.01050	.00115	....	....	
26,000	.01260	.00210	....	....	
27,000	.01400	.00140	....	....	
28,000	.01750	.00350	....	....	
29,000	.01825	.00075	....	....	
30,000	.02075	.00250	....	....	
31,000	.02210	.00135	....	....	
32,000	.02425	.00215	....	....	
51,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	51,900
Elastic limit per square inch of original section ....do...	19,000
Elongation per inch after rupture ....inch..	.3700
Elongation per inch under strain at elastic limit ....do...	.00075
Reduction in diameter at point of rupture ....do...	.185
Reduction in area after rupture, per cent of original section	59.8
Position of rupture	1".30 from neck
Character of broken surface	silky
Elongation of inch sections	".41*, ".33

No. 6474.

Marks, $\overset{\text{A 29}}{\text{2 P 3 6}}$.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
15,000	.00050	.00020	....	....	
20,000	.00080	.00020	....	....	
22,000	.00095	.00015	....	....	
24,000	.00110	.00015	....	....	Elastic limit.
25,000	.01275	.01165	....	....	
26,000	.01470	.00195	....	....	
27,000	.01625	.00155	....	....	
28,000	.01825	.00200	....	....	
29,000	.02075	.00250	....	....	
30,000	.02275	.00200	....	....	
31,000	.02525	.00250	....	....	
32,000	.02725	.00200	....	....	
33,000	.03200	.00475	....	....	
34,000	.03520	.00320	....	....	
50,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	50,900
Elastic limit per square inch of original section	do	24,000
Elongation per inch after rupture	inch	.3500
Elongation per inch under strain at elastic limit	do	.00110
Reduction in diameter at point of rupture	do	.165
Reduction in area after rupture, per cent of original section		54.6
Position of rupture		1″.25 from neck
Character of broken surface		silky
Elongation of inch sections		″.40*, ″.30

No. 6612.

Marks, $\frac{\text{A 30.}}{\text{P S 6.}}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00005	.00005	0.	....	
10,000	.00020	.00015	....	....	
20,000	.00055	.00035	....	....	
27,000	.00080	.00025	....	....	Elastic limit.
28,000	.00205	.00125	....	....	
29,000	.01950	.01745	....	....	
30,000	.02050	.00100	....	....	
31,000	.02375	.00325	....	....	
32,000	.02690	.00315	....	....	
53,550	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	53,550
Elastic limit per square inch of original section ....do...	27,000
Elongation per inch after rupture ....inch..	.3700
Elongation per inch under strain at elastic limit........do...	.00080
Reduction in diameter at point of rupture ....do...	.165
Reduction in area after rupture, per cent of original section........	54.6
Position of rupture........	1".27 from neck
Character of broken surface	silky
Elongation of inch sections	".30, ".44*

No. 6714.

Marks, $\overset{A\ 30}{2\ P\ S\ 6}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	....	....	
10,000	.00040	.00030	....	....	
20,000	.00070	.00030	....	....	
28,000	.00105	.00035	....	....	Elastic limit.
29,000	.02075	.01970	....	....	
30,000	.02400	.00325	....	....	
31,000	.02700	.00300	....	....	
32,000	.03075	.00375	....	....	
33,000	.03250	.00175	....	....	
51,300	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	51,300
Elastic limit per square inch of original section	do...	28,000
Elongation per inch after rupture	inch..	.3050
Elongation per inch under strain at elastic limit	do...	.00105
Reduction in diameter at point of rupture	do...	.115
Reduction in area after rupture, per cent of original section		40.3
Position of rupture		1″.1 from neck
Character of broken surface		dull silky
Elongation of inch sections		″.25, ″.36*

No. 6746.

Marks, $\overset{\text{A 31}}{\text{2-P S 6}}$

Diameter, ″.505.

Sectional area, .20 square inch.

Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00005	.00005	0.	....	
10,000	.00025	.00020	....	....	
20,000	.00060	.00035	....	....	
30,000	.00100	.00040	....	....	Elastic limit.
31,000	.00650	.00550	....	....	
32,000	.00750	.00100	....	....	
33,000	.00850	.00100	....	....	
34,000	.00900	.00050	....	....	
35,000	.01000	.00100	....	....	
64,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	64,900
Elastic limit per square inch of original section	do	30,000
Elongation per inch after rupture	inch	.0850
Elongation per inch under strain at elastic limit	do	.00100
Reduction in diameter at point of rupture	do	.025
Reduction in area after rupture, per cent of original section		9.5
Position of rupture		″.5 from neck
Character of broken surface		granular, 85 per cent; dull silky, 15 per cent
Elongation of inch sections		″.07, ″.10*

No. 6712.

Marks, $\genfrac{}{}{0pt}{}{\text{A 82}}{\text{P S 6}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00025	.00015	....	....	
15,000	.00040	.00015	....	....	
18,000	.00060	.00020	....	....	
19,000	.00070	.00010	....	....	Elastic limit.
20,000	.00270	.00200	....	....	
21,000	.00575	.00305	....	....	
22,000	.00750	.00175	....	....	
23,000	.00825	.00075	....	....	
24,000	.01050	.00225	....	....	
51,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	51,000
Elastic limit per square inch of original section	do...	19,000
Elongation per inch after rupture	inch..	.3700
Elongation per inch under strain at elastic limit	do...	.00070
Reduction in diameter at point of rupture	do...	.165
Reduction in area after rupture, per cent of original section		54.6
Position of rupture		″.8 from neck
Character of broken surface		silky
Elongation of inch sections		″.26, ″.48*

No. 6713.

Marks, $\substack{A\ 33\\P\ S\ 6}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	.0	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
15,000	.00060	.00025	....	....	
20,000	.00085	.00025	....	....	Elastic limit.
21,000	.00105	.00020	....	....	
22,000	.00150	.00045	....	....	
23,000	.00205	.00055	....	....	
24,000	.00675	.00470	....	....	
25,000	.00875	.00200	....	....	
55,400	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	55,400
Elastic limit per square inch of original section	do...	20,000
Elongation per inch after rupture	inch..	.3250
Elongation per inch under strain at elastic limit	do...	.00085
Reduction in diameter at point of rupture	do...	.125
Reduction in area after rupture, per cent of original section		43.3
Position of rupture		at middle of stem
Character of broken surface		silky
Elongation of inch sections		″.34*, ″.31*

No. 6715.

Marks, $\substack{A\ 34\\ P\ S\ 6}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00005	.00005	0.	....	
10,000	.00035	.00030	....	....	
20,000	.00060	.00025	....	....	
30,000	.00090	.00030	....	....	
31,000	.00095	.00005	....	....	Elastic limit.
32,000	.00700	.00605	....	....	
33,000	.00950	.00250	....	....	
34,000	.01525	.00575	....	....	
35,000	.01600	.00075	....	....	
36,000	.01675	.00075	....	....	
66,550	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	66,550
Elastic limit per square inch of original section	do...	31,000
Elongation per inch after rupture	inch..	.2450
Elongation per inch under strain-at elastic limit	do...	.00095
Reduction in diameter at point of rupture	do...	.085
Reduction in area after rupture, per cent of original section		30.7
Position of rupture		1″ from neck
Character of broken surface		dull silky; opened cracks along the length of the stem
Elongation of inch sections		″.28*, ″.21

No. 6716.

Marks, $\overset{A\ 35}{P\ S\ 6}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00005	.00005	0.	....	
10,000	.00035	.00030	....	....	
20,000	.00065	.00030	....	....	
30,000	.00100	.00035	....	....	
31,000	.00105	.00005	....	....	Elastic limit.
32,000	.00700	.00595	....	....	
33,000	.01240	.00540	....	....	
34,000	.01400	.00160	....	....	
35,000	.01495	.00095	....	....	
36,000	.01600	.00105	....	....	
66,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	66,000
Elastic limit per square inch of original section	do...	31,000
Elongation per inch after rupture	inch..	.2500
Elongation per inch under strain at elastic limit	do...	.00105
Reduction in diameter at point of rupture	do...	.085
Reduction in area after rupture, per cent of original section		30.7
Position of rupture		1" from neck
Character of broken surface		silky
Elongation of inch sections		".22, ".28*

No. 6747.

Marks, $\overset{A\ 36}{P\ S\ 6}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00005	.00005	0.	....	
10,000	.00025	.00020	....	....	
20,000	.00060	.00035	....	....	
28,000	.00065	.00025	....	....	
29,000	.00090	.00005	....	....	Elastic limit.
30,000	.00150	.00060	.00050	.00050	
31,000	.00215	.00075	....	....	
32,000	.00265	.00050	....	....	
33,000	.00340	.00075	....	....	
34,000	.00425	.00085	....	....	
75,600	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	75,600
Elastic limit per square inch of original section ....do...	29,000
Elongation per inch after rupture ....inch..	.1450
Elongation per inch under strain at elastic limit ....do...	.00090
Reduction in diameter at point of rupture ....do...	.045
Reduction in area after rupture, per cent of original section	16.9
Position of rupture	1″ from neck
Character of broken surface	granular 60 per cent, dull silky 40 per cent
Elongation of inch sections	″.16*, ″.13

No. 6748.

Marks, A E P 5 4
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00005	.00005	0.	....	
15,000	.00005	.00005	....	....	
21,000	.00005	.00030	....	....	
22,000	.00075	.00015	....	....	
23,000	.00080	.00005	....	....	Elastic limit.
24,000	.00150	.00070	....	....	
25,000	.00245	.00095	....	....	
26,000	.00310	.00065	....	....	
27,000	.00400	.00090	....	....	
28,000	.00500	.00100	....	....	
60,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	60,500
Elastic limit per square inch of original section ....do...	23,000
Elongation per inch after rupture ....inch..	.2900
Elongation per inch under strain at elastic limit ....do...	.00080
Reduction in diameter at point of rupture........do...	.125
Reduction in area after rupture, per cent of original section	43.3
Position of rupture	at middle of stem
Character of broken surface	silky
Elongation of inch sections	".28, ".30

No. 6749.

Marks, $\overset{\text{A 38}}{\text{PS 6}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00005	.00005	0.	....	
10,000	.00030	.00025	....	....	
20,000	.00060	.00030	....	....	
28,000	.00100	.00040	....	....	Elastic limit.
29,000	.00135	.00035	....	....	
30,000	.00155	.00020	....	....	
31,000	.00190	.00035	....	....	
32,000	.00245	.00055	....	....	
33,000	.00340	.00095	....	....	
75,050	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	75,050
Elastic limit per square inch of original section	do...	28,000
Elongation per inch after rupture	inch..	.2050
Elongation per inch under strain at elastic limit	do...	.00100
Reduction in diameter at point of rupture	do...	.065
Reduction in area after rupture, per cent of original section		23.9
Position of rupture		″.95 from neck
Character of broken surface		granular 85 per cent dull silky, 15 per cent
Elongation of inch sections		″.18, ″.23*

No. 6758.

Marks, $\substack{A\ 39\\ P\ S\ 6}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00005	.00005	0.	....	
10,000	.00025	.00020	....	....	
20,000	.00060	.00035	....	....	
25,000	.00095	.00035	....	....	Elastic limit.
26,000	.00200	.00105	....	....	
27,000	.00360	.00160	....	....	
28,000	.00455	.00095	....	....	
29,000	.00550	.00095	....	....	
30,000	.00625	.00075	....	....	
68,050	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	68,050
Elastic limit per square inch of original section	do...	25,000
Elongation per inch after rupture	inch..	.1450
Elongation per inch under strain at elastic limit	do...	.00095
Reduction in diameter at point of rupture	do...	.045
Reduction in area after rupture, per cent of original section		16.9
Position of rupture		″.6 from neck
Character of broken surface		granular, silky spot at the circumference
Elongation of inch sections		″.16*, ″.13

No. 6759.

Marks, $\overset{\text{A 40}}{\text{P S 6}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00005	.00005	0.	....	
10,000	.00030	.00025	....	....	
20,000	.00060	.00030	....	....	
25,000	.00095	.00035	....	....	Elastic limit.
26,000	.00300	.00205	....	....	
27,000	.00390	.00090	....	....	
28,000	.00460	.00070	....	....	
29,000	.00540	.00080	....	....	
30,000	.00660	.00120	....	....	
67,550	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	67,550
Elastic limit per square inch of original section ....do...	25,000
Elongation per inch after rupture ....inch..	.2050
Elongation per inch under strain at elastic limit ....do...	.00095
Reduction in diameter at point of rupture ....do...	.055
Reduction in area after rupture, per cent of original section	20.5
Position of rupture	″.65 from neck
Character of broken surface	granular; silky spot at the circumference
Elongation of inch sections....................	″.19, ″.22*

No. 6760.

Marks, $\substack{\text{A 41}\\ \text{P S 6}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
24,000	.00085	.00025	....	....	Elastic limit.
25,000	.00200	.00115	....	....	
26,000	.00250	.00050	....	....	
27,000	.00350	.00100	....	....	
28,000	.00445	.00095	....	....	
29,000	.00550	.00105	....	....	
68,200	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	68,200
Elastic limit per square inch of original section	do...	24,000
Elongation per inch after rupture	inch..	.2500
Elongation per inch under strain at elastic limit	do...	.00085
Reduction in diameter at point of rupture	do...	.085
Reduction in area after rupture, per cent of original section		30.7
Position of rupture		1″ from neck
Character of broken surface		granular 60 per cent, silky 40 per cent
Elongation of inch sections		″.22, ″.28*

No. 6761.

Marks, $\frac{A\ 42}{P\ S\ 6}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	.0	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	
21,000	.00075	.00010	....	....	Elastic limit.
22,000	.00140	.00065	....	....	
23,000	.00180	.00040	....	....	
24,000	.00180	0.	....	....	
25,000	.00240	.00060	....	....	
26,000	.00345	.00105	....	....	
27,000	.00410	.00065	....	....	
28,000	.00510	.00100	....	....	
69,550	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	69,550
Elastic limit per square inch of original section	do...	21,000
Elongation per inch after rupture	inch..	.1700
Elongation per inch under strain of elastic limit	do...	.00075
Reduction in diameter at point of rupture	do...	.045
Reduction in area after rupture, per cent of original section		16.9
Position of rupture		″.2 from neck
Character of broken surface		granular, silky spot at the circumference
Elongation of inch sections		″.19*,″.15

No. 6781.

Marks, $\overset{\text{A 42}}{\text{2 P S 6}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00060	.00025	....	....	
23,000	.00090	.00030	....	....	Elastic limit.
24,000	.00125	.00035	....	....	
25,000	.00250	.00125	....	....	
26,000	.00460	.00210	....	....	
27,000	.00600	.00140	....	....	
28,000	.00895	.00295	....	....	
61,300	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	61,300
Elastic limit per square inch of original section	do...	23,000
Elongation per inch after rupture	inch..	.0850
Elongation per inch under strain at elastic limit	do...	.00090
Reduction in diameter at point of rupture	do...	.035
Reduction in area after rupture, per cent of original section		13.2
Position of rupture		at the neck
Character of broken surface		granular, small spongy spot at the circumference
Elongation of inch sections		″.09, ″.08*

No. 6762.

Marks, $\overset{A\ 43}{P\ S\ 6}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00070	.00035	....	....	
22,000	.00095	.00025	....	....	
23,000	.00100	.00005	....	....	Elastic limit.
24,000	.00140	.00040	....	....	
25,000	.00250	.00110	....	....	
26,000	.00300	.00050	....	....	
27,000	.00395	.00095	....	....	
28,000	.00495	.00100	....	....	
68,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ......pounds..	68,500
Elastic limit per square inch of original section ......do...	23,000
Elongation per inch after rupture ......inch..	.2650
Elongation per inch under strain at elastic limit ......do...	.00100
Reduction in diameter at point of rupture......do...	.095
Reduction in area after rupture, per cent of original section......	34.0
Position of rupture	at middle of stem
Character of broken surface......	silky, 60 per cent; granular, 40 per cent
Elongation of inch sections	".28*, ".25*

No. 6768.

Marks, $\overset{\text{A 44}}{\text{P S 6}}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00005	.00005	0.	....	
10,000	.00025	.00020	....	....	
20,000	.00055	.00030	....	....	
26,000	.00095	.00040	....	....	Elastic limit.
27,000	.00115	.00020	....	....	
28,000	.00205	.00090	....	....	
29,000	.00255	.00050	....	....	
30,000	.00305	.00050	....	....	
31,000	.00405	.00100	....	....	
72,550	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section..........pounds..	72,550
Elastic limit per square inch of original section..........do...	26,000
Elongation per inch after rupture..........inch..	.1800
Elongation per inch under strain at elastic limit..........do...	.00095
Reduction in diameter at point of rupture..........do...	.055
Reduction in area after rupture, per cent of original section..........	20.5
Position of rupture..........	1".1 from neck
Character of broken surface..........	granular
Elongation of inch sections..........	".16, ".20*

No. 6782.

Marks, $\overset{A\ 45}{P\ S\ 6}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch,*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00060	.00025	....	....	
30,000	.00100	.00040	....	....	
32,000	.00115	.00015	....	....	Elastic limit.
33,000	.00200	.00085	....	....	
34,000	.00850	.00650	....	....	
35,000	.00950	.00100	....	....	
36,000	.01015	.00065	....	....	
37,000	.01150	.00135	....	....	
74,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	74,000
Elastic limit per square inch of original section	do...	32,000
Elongation per inch after rupture	inch..	.2050
Elongation per inch under strain at elastic limit	do...	.00115
Reduction in diameter at point of rupture	do...	.065
Reduction in area after rupture, per cent of original section		23.9
Position of rupture		1″ from neck
Character of broken surface		granular, dull spot at the circumference
Elongation of inch sections		″.23*, ″.18

No. 6783.

Marks, $\overset{A\ 46}{P\ S\ 6}$

Diameter, ".505.

Sectional area, .20 square inch.

Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00060	.00025	....	....	
30,000	.00100	.00040	....	....	
32,000	.00110	.00010	....	....	Elastic limit.
33,000	.00140	.00030	....	....	
34,000	.00850	.00710	....	....	
35,000	.00945	.00095	....	....	
36,000	.00975	.00030	....	....	
37,000	.01055	.00080	....	....	
75,850	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	75,850
Elastic limit per square inch of original section ....do...	32,000
Elongation per inch after rupture ....inch..	.1800
Elongation per inch under strain at elastic limit ....do...	.00110
Reduction in diameter at point of rupture....................do...	.055
Reduction in area after rupture, per cent of original section	20.5
Position of rupture	1".1 from neck
Character of broken surface....................	granular, silky spot at the circumference
Elongation of inch sections	".17, ".19*

No. 6784.

Marks, $^{A\ 47}_{P\ S\ 6}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.		
10,000	.00035	.00025			
20,000	.00060	.00025			
28,000	.00090	.00030			
29,000	.00100	.00010			Elastic limit.
30,000	.00175	.00075			
31,000	.00825	.00650			
32,000	.00925	.00100			
33,000	.01025	.00100			
34,000	.01100	.00075			
68,900					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	68,900
Elastic limit per square inch of original section	do...	29,000
Elongation per inch after rupture	inch..	.2150
Elongation per inch under strain at elastic limit	do...	.00100
Reduction in diameter at point of rupture	do...	.075
Reduction in area after rupture, per cent of original section		27.4
Position of rupture		1″.1 from neck
Character of broken surface		granular 85 per cent, silky 15 per cent
Elongation of inch sections		″.20, ″.23*

No. 6785.

Marks, $\overset{A\ 48}{PS6}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	....	....	
10,000	.00035	.00025	....	....	
20,000	.00060	.00025	....	....	
28,000	.00100	.00040	....	....	Elastic limit.
29,000	.00150	.00050	....	....	
30,000	.00700	.00550	....	....	
31,000	.00800	.00100	....	....	
32,000	.00900	.00100	....	....	
33,000	.01015	.00115	....	....	
69,600	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	69,600
Elastic limit per square inch of original section	do...	28,000
Elongation per inch after rupture	inch..	.2250
Elongation per inch under strain at elastic limit	do...	.00100
Reduction in diameter at point of rupture	do...	.065
Reduction in area after rupture, per cent of original section		23.9
Position of rupture		″.95 from neck
Character of broken surface		granular, silky spot at the circumference
Elongation of inch sections		″.21, ″.24*

No. 6804.

Marks, $\overset{A\ 49}{P\ S\ 6}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.		
10,000	.00035	.00025			
20,000	.00065	.00030			
22,000	.00075	.00010			
23,000	.00085	.00010			Elastic limit.
24,000	.00155	.00070			
25,000	.00245	.00090			
26,000	.00350	.00105			
27,000	.00460	.00110			
28,000	.00550	.00090			
67,900					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	67,900
Elastic limit per square inch of original section	do...	23,000
Elongation per inch after rupture	inch..	.2500
Elongation per inch under strain at elastic limit	do...	.00085
Reduction in diameter at point of rupture	do...	.085
Reduction in area after rupture, per cent of original section		30.7
Position of rupture		″.75 from neck
Character of broken surface		granular 50 per cent, silky 50 per cent
Elongation of inch sections		″.18, ″.32*

No. 6805.

Marks, $^{A\ 50}_{P\ S\ 6}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.		
10,000	.00035	.00025			
20,000	.00060	.00025			
27,000	.00100	.00040			Elastic limit.
28,000	.00135	.00035			
29,000	.00175	.00040			
30,000	.00205	.00030			
31,000	.00260	.00055			
32,000	.00390	.00130			
75,100					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	75,100
Elastic limit per square inch of original section	do	27,000
Elongation per inch after rupture	inch	.1750
Elongation per inch under strain at elastic limit	do	.00100
Reduction in diameter at point of rupture	do	.055
Reduction in area after rupture, per cent of original section		20.5
Position of rupture		1″ from neck
Character of broken surface		granular 80 per cent, silky 20 per cent
Elongation of inch sections		″.16, ″.19*

No. 6806.

Marks, $\overset{A\ 51}{P86}$

Diameter, ″.505.

Sectional area, .20 square inch.

Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	
30,000	.00105	.00040	....	....	
33,000	.00120	.00015	....	....	Elastic limit.
34,000	.01175	.01055	....	....	
35,000	.01250	.00075	....	....	
36,000	.01350	.00100	....	....	
37,000	.01440	.00090	....	....	
38,000	.01550	.00110	....	....	
69,650	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section .... pounds..	69,650
Elastic limit per square inch of original section .... do...	33,000
Elongation per inch after rupture .... inch..	.2500
Elongation per inch under strain at elastic limit .... do...	.00120
Reduction in diameter at point of rupture .... do...	.075
Reduction in area after rupture, per cent of original section	27.4
Position of rupture	1″ from neck
Character of broken surface	dull silky 60 per cent, granular 40 per cent
Elongation of inch sections	″.24, ″.26

No. 6924.

Marks, $^{\text{A 52}}_{\text{PS6}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	
30,000	.00105	.00040	....	....	
36,000	.00140	.00035	....	....	Elastic limit.
37,000	.01100	.00960	....	....	
38,000	.01215	.00115	....	....	
39,000	.01285	.00070	....	....	
40,000	.01350	.00065	....	....	
41,000	.01450	.00100	....	....	
75,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	75,900
Elastic limit per square inch of original section	do	36,000
Elongation per inch after rupture	inch	.1900
Elongation per inch under strain at elastic limit	do	.00140
Reduction in diameter at point of rupture	do	.075
Reduction in area after rupture, per cent of original section		27.4
Position of rupture		″.7 from neck
Character of broken surface		granular, silky spot at the circumference
Elongation of inch sections		″.23,* ″.15

No. 6937.

Marks, $\substack{\text{A 58}\\ \text{P S 6}}$
Diameter, ''.505.
Sectional area, .20 square inch.
Gauged length, 2''.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00065	.00035	....	....	
26,000	.00090	.00025	....	....	Elastic limit.
27,000	.00150	.00060	....	....	
28,000	.00750	.00600	....	....	
29,000	.00865	.00115	....	....	
30,000	.00950	.00085	....	....	
31,000	.01050	.00100	....	....	
66,550	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	66,550
Elastic limit per square inch of original section	do...	26,000
Elongation per inch after rupture	inch..	.2100
Elongation per inch under strain at elastic limit	do...	.00090
Reduction in diameter at point of rupture	do...	.065
Reduction in area after rupture, per cent of original section		23.9
Position of rupture		1''.1 from neck
Character of broken surface		granular, silky spot at the circumference
Elongation of inch sections		''.23*, ''.19

No. 6918.

Marks, $^{A\ 54}_{P\,S\,6}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00030	.00030	....	....	
26,000	.00095	.00035	....	....	Elastic limit.
27,000	.00265	.00170	....	....	
28,000	.00675	.00410	....	....	
29,000	.00725	.00050	....	....	
30,000	.00850	.00125	....	....	
31,000	.00925	.00075	....	....	
66,300	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	66,300
Elastic limit per square inch of original section	do...	26,000
Elongation per inch after rupture	inch..	.2350
Elongation per inch under strain at elastic limit	do...	.00095
Reduction in diameter at point of rupture	do...	.075
Reduction in area after rupture, per cent of original section		27.4
Position of rupture		1″.1 from neck
Character of broken surface		granular
Elongation of inch sections		″.24, ″.23*

No. 6938.

Marks, $\overset{A\ 55}{P\ S\ 6}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	....	....	
10,000	.00040	.00030	....	....	
20,000	.00070	.00030	....	....	
27,000	.00110	.00040	....	....	Elastic limit.
28,000	.00135	.00025	....	....	
29,000	.00775	.00640	....	....	
30,000	.00875	.00100	....	....	
31,000	.00965	.00090	....	....	
32,000	.01075	.00110	....	....	
65,800	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	65,800
Elastic limit per square inch of original section	do...	27,000
Elongation per inch after rupture	inch..	.2700
Elongation per inch under strain at elastic limit	do...	.00110
Reduction in diameter at point of rupture	do...	.095
Reduction in area after rupture, per cent of original section		34.0
Position of rupture		″.9 from neck
Character of broken surface		silky
Elongation of inch sections		″.24, ″.30*

No. 6939.

Marks, $^{\text{A 56}}_{\text{P S 6}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	....	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	
30,000	.00110	.00045	....	....	
31,000	.00120	.00010	....	....	Elastic limit.
32,000	.00750	.00630	....	....	
33,000	.00850	.00100	....	....	
34,000	.00945	.00095	....	....	
35,000	.01025	.00080	....	....	
36,000	.01125	.00100	....	....	
72,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	72,500
Elastic limit per square inch of original section ....do...	31,000
Elongation per inch after rupture ....inch..	.2450
Elongation per inch under strain at elastic limit ....do...	.00120
Reduction in diameter at point of rupture...do...	.085
Reduction in area after rupture, per cent of original section	30.7
Position of rupture..	1″ from neck
Character of broken surface..	granular 60 per cent, silky 40 per cent
Elongation of inch sections..	″.22, ″.27*

No. 6940.

Marks, $\overset{\text{A 57}}{\text{P S 6}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00060	.00025	....	....	
30,000	.00100	.00040	....	....	
34,000	.00120	.00020	....	....	Elastic limit.
35,000	.00150	.00030	....	....	
36,000	.00590	.00440	....	....	
37,000	.00675	.00085	....	....	
38,000	.00775	.00100	....	....	
39,000	.00870	.00095	....	....	
84,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	84,000
Elastic limit per square inch of original section ....do...	34,000
Elongation per inch after rupture ....inch..	.1850
Elongation per inch under strain at elastic limit.................... do...	.00120
Reduction in diameter at point of rupture....................do...	.055
Reduction in area after rupture, per cent of original section....................	20.5
Position of rupture	1″.1 from neck
Character of broken surface	granular, silky spot at the circumference
Elongation of inch sections	″.19, ″.18*

No. 6941.

Marks, $\overset{\text{A 58}}{\text{P S 6}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00070	.00035	....	....	
24,000	.00095	.00025	....	....	Elastic limit.
25,000	.00115	.00020	....	....	
26,000	.00150	.00035	....	....	
27,000	.00205	.00055	....	....	
28,000	.00450	.00245	....	....	
29,000	.00550	.00100	....	....	
69,450	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	69,450
Elastic limit per square inch of original section	do	24,000
Elongation per inch after rupture	inch	.2500
Elongation per inch under strain at elastic limit	do	.00095
Reduction in diameter at point of rupture	do	.095
Reduction in area after rupture, per cent of original section		34.0
Position of rupture		1″ from neck
Character of broken surface		granular, silky spot at the circumference
Elongation of inch sections		″.29*, ″.21

No. 6942.

Marks, $\overset{A\ 59}{P\ S\ 6}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00060	.00025	....	....	
27,000	.00095	.00035	....	....	Elastic limit.
28,000	.00200	.00105	....	....	
29,000	.00525	.00325	....	....	
30,000	.00645	.00120	....	....	
31,000	.00720	.00075	....	....	
32,000	.00800	.00080	....	....	
71,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	71,000
Elastic limit per square inch of original section	do	27,000
Elongation per inch after rupture	inch	.2350
Elongation per inch under strain at elastic limit	do	.00095
Reduction in diameter at point of rupture	do	.085
Reduction in area after rupture, per cent of original section		30.7
Position of rupture		".9 from neck
Character of broken surface		granular, silky spot at the circumference
Elongation of inch sections		".27*, ".20

No. 6943.

Marks, $\overset{\text{A 60}}{\text{P S 6}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.		
10,000	.00025	.00015			
20,000	.00060	.00035			
30,000	.00100	.00040			
34,000	.00115	.00015			Elastic limit.
35,000	.00775	.00660			
36,000	.00850	.00075			
37,000	.00925	.00075			
38,000	.01010	.00085			
39,000	.01100	.00090			
77,700					Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	77,700
Elastic limit per square inch of original section ....do...	34,000
Elongation per inch after rupture........inch..	.2300
Elongation per inch under strain at elastic limit........do...	.00115
Reduction in diameter at point of rupture........do...	.095
Reduction in area after rupture, per cent of original section........	34.0
Position of rupture	at middle of stem
Character of broken surface	granular 40 per cent, dull silky 60 per cent
Elongation of inch sections........	″.24*, ″.22*

No. 6944.

Marks, $\overset{A\ 61}{P\ S\ 6}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.		
10,000	.00035	.00025			
20,000	.00060	.00025			
28,000	.00100	.00040			
29,000	.00105	.00005			Elastic limit.
30,000	.00150	.00045			
31,000	.00510	.00360			
32,000	.00650	.00140			
33,000	.00700	.00050			
34,000	.00785	.00085			
75,900					Tensile strength.

General summary.

Tensile strength per square inch of original section .... pounds..	75,900
Elastic limit per square inch of original section .... do...	29,000
Elongation per inch after rupture .... inch..	.1800
Elongation per inch under strain at elastic limit .... do...	.00105
Reduction in diameter at point of rupture .... do...	.055
Reduction in area after rupture, per cent of original section	20.5
Position of rupture	″.5 from neck
Character of broken surface	granular, silky spot at the circumference
Elongation of inch sections	″.20*, ″.16

No. 6945.

Marks, $\overset{A\ 62}{P\ S\ 6}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	....	....	
10,000	.00035	.00020	....	....	
20,000	.00070	.00035	....	....	
27,000	.00100	.00030	....	....	Elastic limit.
28,000	.00145	.00045	....	....	
29,000	.00690	.00545	....	....	
30,000	.00750	.00060	....	....	
31,000	.00840	.00090	....	....	
32,000	.00940	.00100	....	....	
69,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	69,100
Elastic limit per square inch of original section	do...	27,000
Elongation per inch after rupture	inch..	.2150
Elongation per inch under strain at elastic limit	do...	.00100
Reduction in diameter at point of rupture	do...	.065
Reduction in area after rupture, per cent of original section		23.9
Position of rupture		1".2 from neck
Character of broken surface		granular, dull flaky spot at the circumference; opened cracks in the surface of stem
Elongation of inch sections		".20, ".23*

No. 6946.

Marks, $\overset{\text{A 63}}{\text{P S 6}}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00065	.00035	....	....	
28,000	.00095	.00030	....	....	
29,000	.00100	.00005	....	....	Elastic limit.
30,000	.00125	.00025	....	....	
31,000	.00490	.00365	....	....	
32,000	.00650	.00160	....	....	
33,000	.00705	.00055	....	....	
34,000	.00795	.00090	....	....	
74,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section............pounds..	74,100
Elastic limit per square inch of original section............do...	29,000
Elongation per inch after rupture............inch..	.1350
Elongation per inch under strain at elastic limit............do...	.00100
Reduction in diameter at point of rupture............do...	.045
Reduction in area after rupture, per cent of original section............	16.9
Position of rupture............	".6 from neck
Character of broken surface............	granular, silky spot at the circumference
Elongation of inch sections............	".12, ".15*

AXLES—6-POUNDER MOUNTS.

STEEL FORGINGS.

No. 6590.

Marks, $\overset{A\ .21}{A\ X\ 6}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	
27,000	.00080	.00015	....	....	Elastic limit.
28,000	.01150	.01070	....	....	
29,000	.01240	.00090	....	....	
30,000	.01350	.00110	....	....	
31,000	.01440	.00090	....	....	
32,000	.01615	.00175	....	....	
62,150	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	62,150
Elastic limit per square inch of original section	do	27,000
Elongation per inch after rupture	inch	.2800
Elongation per inch under strain at elastic limit	do	.00080
Reduction in diameter at point of rupture	do	.125
Reduction in area after rupture, per cent of original section	do	43.3
Position of rupture		1″.18 from neck
Character of broken surface		silky
Elongation of inch sections		″.31*, ″.25

No. 6767.

Marks, $\overset{\text{A 23}}{\text{A X 6}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive Elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00005	.00005	0.	....	
10,000	.00035	.00030	....	....	
20,000	.00060	.00025	....	....	
30,000	.00100	.00040	....	....	
35,000	.00115	.00015	....	....	Elastic limit.
	.01600	.01485	....	....	
36,000	.01740	.00140	....	....	
37,000	.01850	.00110	....	....	
38,000	.01955	.00105	....	....	
39,000	.02100	.00145	....	....	
40,000	.02300	.00200	....	....	
65,300	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	65,300
Elastic limit per square inch of original section	do...	35,000
Elongation per inch after rupture	inch..	.3250
Elongation per inch under strain at elastic limit	do...	.00115
Reduction in diameter at point of rupture	do...	.175
Reduction in area after rupture, per cent of original section		57.2
Position of rupture		1″.25 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		″.28, ″.37*

No. 6901.

Marks, $\begin{smallmatrix}A\ 26\\ A\ X\ 6\end{smallmatrix}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00060	.00025	....	....	
30,000	.00100	.00040	....	....	Elastic limit.
31,000	.01525	.01425	....	....	
32,000	.01700	.00175	....	....	
33,000	.01800	.00100	....	....	
34,000	.01950	.00150	....	....	
35,000	.02100	.00150	....	....	
61,200	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	61,200
Elastic limit per square inch of original section	do	30,000
Elongation per inch after rupture	inch	.3100
Elongation per inch under strain at elastic limit	do	.00100
Reduction in diameter at point of rupture	do	.145
Reduction in area after rupture, per cent of original section		49.1
Position of rupture		at middle of stem
Character of broken surface		silky
Elongation of inch sections		″.30*, ″.32*

No. 6902.

Marks, $\substack{A\ 30\\ A\ X\ 6}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00025	.00015	....	....	
20,000	.00060	,00035	....	....	
30,000	.00095	.00035	....	....	
33,000	.00100	.00005	....	....	Elastic limit.
34,000	.01725	.01625	....	....	
35,000	.01775	.00050	....	....	
36,000	.01840	.00065	....	....	
37,000	.02000	.00160	....	....	
38,000	.02200	.00200	....	....	
64,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	64,100
Elastic limit per square inch of original section	do...	33,000
Elongation per inch after rupture	inch..	.3200
Elongation per inch under strain at elastic limit	do...	.00100
Reduction in diameter at point of rupture	do...	.145
Reduction in area after rupture, per cent of original section		49.1
Position of rupture		1″.2 from neck
Character of broken surface		silky
Elongation of inch sections		″.26, ″.38*

No. 6903.

Marks, $\overset{\text{A 31}}{\text{A X 6}}$
Diameter, ″.505.
Sectional area,..20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00030	.00015	....	....	
20,000	.00060	.00030	....	....	
30,000	.00095	.00035	....	....	
31,000	.00100	.00005	....	....	Elastic limit.
32,000	.01375	.01275	....	....	
33,000	.01400	.00025	....	....	
34,000	.01500	.00100	....	....	
35,000	.01600	.00100	....	....	
36,000	.01775	.00175	....	....	
65,550	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	65,550
Elastic limit per square inch of original section	do...	31,000
Elongation per inch after rupture	inch..	.3000
Elongation per inch under strain at elastic limit	do...	.00100
Reduction in diameter at point of rupture	do...	.185
Reduction in area after rupture, per cent of original section		46.2
Position of rupture		1″.1 from neck
Character of broken surface		silky
Elongation of inch sections		″.25, ″.35*

No. 6923.

Marks, $\overset{\text{A 33}}{\text{A X 6}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00005	.00005	0.	....	
10,000	.00030	.00025	....	....	
20,000	.00060	.00030	....	....	
24,000	.00085	.00025	....	....	Elastic limit.
25,000	.00550	.00465	....	....	
26,000	.00800	.00250	....	....	
27,000	.01050	.00250	....	....	
28,000	.01210	.00160	....	....	
29,000	.01350	.00140	....	....	
59,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section .... pounds..	59,100
Elastic limit per square inch of original section .... do...	24,000
Elongation per inch after rupture .... inch..	.3400
Elongation per inch under strain at elastic limit .... do...	.00085
Reduction in diameter at point of rupture .... do...	.175
Reduction in area after rupture, per cent of original section	57.2
Position of rupture	1″.2 from neck
Character of broken surface	silky
Elongation of inch sections	″.41*, ″.27

PISTON RODS—6-POUNDER GUN MOUNTS.

STEEL FORGINGS.

No. 6591.

Marks, $\overset{\text{A 26}}{\text{P R 6}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
30,000	.00100	.00040	....	....	
35,000	.00115	.00015	....	....	Elastic limit.
36,000	.00400	.00285	....	....	
37,000	.00630	.00230	....	....	
38,000	.00700	.00070	....	....	
39,000	.00745	.00045	....	....	
40,000	.00800	.00055	....	....	
85,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	85,500
Elastic limit per square inch of original section....do...	35,000
Elongation per inch after rupture ....inch..	.2250
Elongation per inch under strain at elastic limit ....do...	.00115
Reduction in diameter at point of rupture....do...	.065
Reduction in area after rupture, per cent of original section....	30.7
Position of rupture	1″.1 from neck
Character of broken surface	silky 60 per cent, granular 40 per cent
Elongation of inch sections....	″.25*, ″.20

No. 6592.

Marks, $\overset{\text{A 27}}{\text{P R 6}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00065	.00035	....	....	
30,000	.00100	.00035	....	....	
33,000	.00110	.00010	....	....	
34,000	.00115	.00005	....	....	Elastic limit.
35,000	.00600	.00485	....	....	
36,000	.00655	.00055	....	....	
37,000	.00710	.00055	....	....	
38,000	.00795	.00085	....	....	
39,000	.00890	.00095	....	....	
83,150	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds.. 83,150
Elastic limit per square inch of original section ....do... 34,000
Elongation per inch after rupture ....inch.. .2150
Elongation per inch under strain at elastic limit ....do... .00115
Reduction in diameter at point of rupture....................................do... .075
Reduction in area after rupture, per cent of original section.................................... 27.4
Position of rupture .... 1″. from neck
Character of broken surface .... granular 80 per cent, dull silky 20 per cent
Elongation of inch sections .... ″.25*, ″.18

No. 6593.

Marks, $\overset{\text{A}}{\text{P}}\,\overset{\text{41}}{\text{R}}\,\text{6}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00060	.00025	....	....	
30,000	.00100	.00040	....	....	
34,000	.00115	.00015	....	....	Elastic limit.
35,000	.00135	.00020	....	....	
36,000	.00625	.00490	....	....	
37,000	.00705	.00080	....	....	
38,000	.00750	.00045	....	....	
39,000	.00825	.00075	....	....	
85,400	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	85,400
Elastic limit per square inch of original section ....do...	34,000
Elongation per inch after rupture ....inch..	.2150
Elongation per inch under strain at elastic limit ....do...	.00115
Reduction in diameter at point of rupture ....do...	.075
Reduction in area after rupture, per cent of original section	27.4
Position of rupture	at middle of stem
Character of broken surface	granular 70 per cent, dull silky 30 per cent
Elongation of inch sections	″.22*, ″.21*

No. 6594.

Marks, $\begin{matrix}\text{A 54}\\ \text{P R 6}\end{matrix}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
30,000	.00095	.00035	....	....	
34,000	.00110	.00015	....	....	Elastic limit.
35,000	.00425	.00315	....	....	
36,000	.00655	.00230	....	....	
37,000	.00750	.00095	....	....	
38,000	.00800	.00050	....	....	
39,000	.00895	.00095	....	....	
82,400	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	82,400
Elastic limit per square inch of original section ....do...	34,000
Elongation per inch after rupture ....inch..	.2250
Elongation per inch under strain at elastic limit ....do...	.00110
Reduction in diameter at point of rupture ....do...	.085
Reduction in area after rupture, per cent of original section	30.7
Position of rupture	at middle of stem
Character of broken surface	dull silky, with granular spot at circumference
Elongation of inch sections	″.22, ″.23*

PIVOT SOCKETS—15-POUNDER GUN MOUNTS.

STEEL CASTINGS.

No. 6464.

Marks, $\overset{\text{A 1}}{\text{2 P}}\text{ S 15}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00040	.00025	....	....	
15,000	.00060	.00020	....	....	
20,000	.00075	.00015	....	....	
25,000	.00100	.00025	....	....	
26,000	.00110	.00010	....	....	Elastic limit.
27,000	.00145	.00035	....	....	
28,000	.00175	.00030	....	....	
29,000	.00235	.00060	....	....	
30,000	.00350	.00115	....	....	
31,000	.00450	.00100	....	....	
32,000	.00510	.00060	....	....	
33,000	.00560	.00050	....	....	
34,000	.00640	.00080	....	....	
35,000	.00700	.00060	....	....	
36,000	.00760	.00060	....	....	
55,800	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	55,800
Elastic limit per square inch of original section	do...	26,000
Elongation per inch after rupture	inch..	.0300
Elongation per inch under strain at elastic limit	do...	.00110
Reduction in diameter at point of rupture	do...	.006
Reduction in area after rupture, per cent of original section		1.8
Position of rupture		".70 from neck
Character of broken surface		granular, dull spot at circumference
Elongation of inch sections		".04*, ".02

No. 6465.

Marks, $\overset{A\,2}{2\,P\,S\,15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00025	.00015	....	....	
15,000	.00050	.00025	....	....	
18,000	.00065	.00015	....	....	Elastic limit.
19,000	.00100	.00035	....	....	
20,000	.00115	.00015	....	....	
21,000	.00160	.00045	....	....	
22,000	.00260	.00100	....	....	
23,000	.00425	.00165	....	....	
24,000	.00540	.00115	....	....	
25,000	.00660	.00120	....	....	
26,000	.00790	.00130	....	....	
27,000	.00950	.00160	....	....	
28,000	.01070	.00120	....	....	
29,000	.01225	.00155	....	....	
30,000	.01400	.00175	....	....	
51,950	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section........pounds..	51,950
Elastic limit per square inch of original section........do...	18,000
Elongation per inch after rupture........inch..	.1650
Elongation per inch under strain at elastic limit........do...	.00065
Reduction in diameter at point of rupture........do...	.075
Reduction in area after rupture, per cent of original section........	27.4
Position of rupture........	″.60 from neck
Character of broken surface........	dull silky, trace of granulation
Elongation of inch sections........	″.14, ″.19*

No. 6480.

Marks, $\overset{A\ 27}{3\ P\ S\ 15}$.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.		
10,000	.00030	.00020			
15,000	.00050	.00020			
20,000	.00070	.00020			
25,000	.00100	.00030			
26,000	.00110	.00010			
27,000	.00120	.00010			Elastic limit.
28,000	.00145	.00025			
29,000	.00200	.00055			
30,000	.00240	.00040			
31,000	.00275	.00035			
32,000	.00350	.00075			
33,000	.00440	.00090			
34,000	.00550	.00110			
35,000	.00675	.00125			
36,000	.00750	.00075			
37,000	.00850	.00100			
38,000	.01000	.00150			
46,300					Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds.. 46,300
Elastic limit per square inch of original section ....do... 27,000
Elongation per inch after rupture ....inch.. .0300
Elongation per inch under strain at elastic limit ....do... .00120
Reduction in diameter at point of rupture....................do... .015
Reduction in area after rupture, per cent of original section 5.7
Position of rupture .... at middle of stem
Character of broken surface.................... granular 60 per cent, spongy 40 per cent
Elongation of inch sections .... ″.05*, ″.01

No. 6481.

Marks, $\overset{\text{A 28}}{\text{3 P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	0.	0.	0.	....	
10,000	.00020	.00020	....	....	
15,000	.00040	.00020	....	....	
20,000	.00060	.00020	....	....	
25,000	.00090	.00030	....	....	
26,000	.00100	.00010	....	....	
27,000	.00110	.00010	....	....	Elastic limit.
28,000	.00160	.00050	....	....	
29,000	.00190	.00030	....	....	
30,000	.00250	.00060	....	....	
31,000	.00300	.00050	....	....	
32,000	.00390	.00090	....	....	
33,000	.00490	.00100	....	....	
34,000	.00615	.00125	....	....	
35,000	.00730	.00115	....	....	
36,000	.00850	.00120	....	....	
53,200	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	53,200
Elastic limit per square inch of original section	do...	27,000
Elongation per inch after rupture	inch..	.0550
Elongation per inch under strain at elastic limit	do...	.00110
Reduction in diameter at point of rupture	do...	.025
Reduction in area after rupture, per cent of original section		9.5
Position of rupture		″.50 from neck
Character of broken surface		granular 80 per cent, spongy 20 per cent
Elongation of inch sections		″.04, ″.07*

No. 6482,

Marks, $\overset{A\ 30}{2\ P\ S\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
15,000	.00050	.00020	....	....	
20,000	.00080	.00030	....	....	Elastic limit.
21,000	.00120	.00040	....	....	
22,000	.00140	.00020	....	....	
23,000	.00190	.00050	....	....	
24,000	.00475	.00285	....	....	
25,000	.00650	.00175	....	....	
26,000	.00830	.00180	....	....	
27,000	.00950	.00120	....	....	
28,000	.01100	.00150	....	....	
29,000	.01200	.00100	....	....	
30,000	.01415	.00215	....	....	
36,400	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	**36,400**
Elastic limit per square inch of original section ....do...	**20,000**
Elongation per inch after rupture ....inch..	**.0800**
Elongation per inch under strain at elastic limit ....do...	**.00080**
Position of rupture	**at neck, and at a seam in head**
Character of broken surface	**granular and silky 50 per cent, seamy 50 per cent**
Elongation of inch sections	**″.04, ″.02**

No. 6532.

Marks, $\overset{\text{A 30}}{\text{S P S 15}}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	....	....	
10,000	.00040	.00030	....	....	
15,000	.00060	.00020	....	....	
20,000	.00090	.00030	.00010	.00010	
21,000	.00095	.00005	....	....	
22,000	.00100	.00005	....	....	Elastic limit.
23,000	.00125	.00025	....	....	
24,000	.00155	.00030	....	....	
25,000	.00210	.00055	....	....	
26,000	.00325	.00115	....	....	
27,000	.00500	.00175	....	....	
28,000	.00640	.00140	....	....	
29,000	.00750	.00110	....	....	
30,000	.00900	.00150	....	....	
49,600	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	49,600
Elastic limit per square inch of original section	do...	22,000
Elongation per inch after rupture	inch..	.0650
Elongation per inch under strain at elastic limit	do...	.00100
Reduction in diameter at point of rupture	do...	.035
Reduction in area after rupture, per cent of original section		13.2
Position of rupture		".75 from neck
Character of broken surface		amorphous, spongy
Elongation of inch sections		".03, ".10*

No. 6483.

Marks, $\overset{\text{A 31}}{\text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.		
10,000	.00030	.00020			
15,000	.00050	.00020			
20,000	.00065	.00015			
25.000	.00095	.00030			
26,000	.00110	.00015			
27,000	.00125	.00015			Elastic limit.
28,000	.00220	.00095			
29,000	.00290	.00070			
30,000	.00350	.00060			
31,000	.00440	.00090			
32,000	.00540	.00100			
33,000	.00650	.00110			
34,000	.00735	.00105			
35,000	.00865	.00110			
36,000	.01000	.00135			
45,900					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	45,900
Elastic limit per square inch of original section	do...	27,000
Elongation per inch after rupture	inch..	.0350
Elongation per inch under strain at elastic limit	do...	.00125
Reduction in diameter at point of rupture	do...	.015
Reduction in area after rupture, per cent of original section		5.7
Position of rupture		″.75 from neck
Character of broken surface		granular 70 per cent, seamy, 30 per cent
Elongation of inch sections		″.04, ″.03*

No. 6632.

Marks, $\overset{A\ 31}{2\ P\ S\ 15}$

Diameter ″.500.

Sectional area, .196 square inch.

Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00025	.00015	....	....	
20,000	.00055	.00030	....	....	
30,000	.00090	.00035	....	....	
31,000	.00095	.00005	....	....	
32,000	.00100	.00005	....	....	Elastic limit.
33,000	.00875	.00775	....	....	
34,000	.00925	.00050	....	....	
35,000	.00940	.00015	....	....	
36,000	.01015	.00075	....	....	
37,000	.01100	.00085	....	....	
74,390	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	74,390
Elastic limit per square inch of original section	do...	32,000
Elongation per inch after rupture	inch..	.1350
Elongation per inch under strain at elastic limit	do...	.00100
Reduction in diameter at point of rupture	do...	.040
Reduction in area after rupture, per cent of original section		15.2
Position of rupture		″.7 from neck
Character of broken surface		granular, radiating from a silky spot at circumference
Elongation of inch sections		″.12, ″.15

No. 6451.

Marks, $\overset{\text{A 33}}{\text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00020	.00010	....	....	
15,000	.00050	.00030	....	....	
20,000	.00065	.00015	....	....	
25,000	.00085	.00020	....	....	
28,000	.00090	.00005	....	....	
29,000	.00100	.00010	....	....	
30,000	.00100	.0	....	....	Elastic limit.
31,000	.01200	.01100	....	....	
32,000	.01205	.00005	....	....	
33,000	.01235	.00030	....	....	
34,000	.01325	.00030	....	....	
35,000	.01500	.00175	....	....	
36,000	.01650	.00150	....	....	
37,000	.01790	.00140	....	....	
38,000	.01950	.00160	....	....	
39,000	.02100	.00150	....	....	
40,000	.02250	.00150	....	....	
64,950	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	64,950
Elastic limit per square inch of orignal section	do	30,000
Elongation per inch after rupture	inch	.3150
Elongation per inch under strain at elastic limit	do	.00100
Reduction in diameter at point of rupture	do	.135
Reduction in area after rupture, per cent of orignal section		46.2
Position of rupture		1″.45 from neck
Character of broken surface		silky
Elongation of inch sections		″.27, ″.36*

No. 6452.

Marks, $\overset{\text{A 34}}{\text{P S 15}}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00015	.00005	....	....	
15,000	.00030	.00015	....	....	
20,000	.00050	.00020	....	....	
25,000	.00065	.00015	....	....	
30,000	.00085	.00020	....	....	
32,000	.00095	.00010	....	....	
34,000	.00100	.00005	....	....	Elastic limit.
35,000	.00745	.00645	....	....	
36,000	.00810	.00065	....	....	
37,000	.00860	.00050	....	....	
38,000	.00950	.00090	....	....	
39,000	.01050	.00100	....	....	
40,000	.01155	.00105	....	....	
41,000	.01225	.00070	....	....	
42,000	.01350	.00125	....	....	
43,000	.01450	.00100	....	....	
73,400	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds...	73,400
Elastic limit per square inch of original section	do...	34,000
Elongation per inch after rupture	inch..	.1550
Elongation per inch under strain at elastic limit	do...	.00100
Reduction in diameter at point of rupture	do...	.045
Reduction in area after rupture, per cent of original section		16.9
Position of rupture		".60 from neck
Character of broken surface		fine granular 80 per cent, dull silky 20 per cent
Elongation of inch sections		".16*, ".15

No. 6484.

Marks, $\begin{smallmatrix}\text{A 35}\\ \text{PS 15}\end{smallmatrix}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	0.	0.	....	....	
10,000	.00015	.00015	....	....	
15,000	.00040	.00025	....	....	
20,000	.00060	.00020	....	....	
25,000	.00075	.00015	....	....	
26,000	.00085	.00010	....	....	
27,000	.00090	.00005	....	....	
28,000	.00095	.00005	....	....	Elastic limit.
29,000	.01100	.01005	....	....	
30,000	.01150	.00050	....	....	
31,000	.01225	.00075	....	....	
32,000	.01350	.00125	....	....	
33,000	.01500	.00150	....	....	
34,000	.01600	.00100	....	....	
35,000	.01775	.00175	....	....	
36,000	.01950	.00175	....	....	
37,000	.02140	.00190	....	....	
38,000	.02350	.00210	....	....	
61,450	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section..........pounds..	61,450
Elastic limit per square inch of original section..........do...	28,000
Elongation per inch after rupture..........inch..	.2700
Elongation per inch under strain at elastic limit..........do...	.00095
Reduction of diameter at point of rupture..........do...	.085
Reduction in area after rupture, per cent of original section..........	30.7
Position of rupture..........	″.50 from neck
Character of broken surface..........	silky
Elongation of inch sections..........	″.32*, ″.20

No. 6485.

Marks, $\overset{\text{A 36}}{\text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	....	....	
10,000	.00020	.00010	....	....	
15,000	.00045	.00025	....	....	
20,000	.00065	.00020	....	....	
22,000	.00075	.00010	....	....	
23,000	.00085	.00010	....	....	
24,000	.00095	.00010	....	....	
25,000	.00110	.00015	....	....	Elastic limit.
26,000	.00165	.00055	....	....	
27,000	.00190	.00025	....	....	
28,000	.00265	.00075	....	....	
29,000	.00360	.00095	....	....	
30,000	.00460	.00100	....	....	
31,000	.00595	.00135	....	....	
32,000	.00695	.00100	....	....	
33,000	.00815	.00120	....	....	
34,000	.00910	.00095	....	....	
62,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	62,900
Elastic limit per square inch of original section	do...	25,000
Elongation per inch after rupture	inch..	.1500
Elongation per inch under strain at elastic limit	do...	.00110
Reduction in diameter at point of rupture	do...	.065
Reduction in area after rupture, per cent of original section		23.9
Position of rupture		″.25 from neck
Character of broken surface		silky, trace of granulation
Elongation of inch sections		″.18*, ″.12

No. 6486.

Marks, $\substack{\text{A 37}\\ \text{P S 15}}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00040	.00025	....	....	
15,000	.00055	.00015	....	....	
20,000	.00090	.00035	....	....	
21,000	.00100	.00010	....	....	
22,000	.00115	.00015	....	....	Elastic limit.
23,000	.00160	.00045	....	....	
24,000	.00190	.00030	....	....	
25,000	.00225	.00035	....	....	
26,000	.00300	.00075	....	....	
27,000	.00400	.00100	....	....	
28,000	.00475	.00075	....	....	
29,000	.00575	.00100	....	....	
30,000	.00700	.00125	....	....	
31,000	.00760	.00060	....	....	
32,000	.00900	.00140	....	....	
62,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	**pounds**	**62,000**
Elastic limit per square inch of original section	**do**	**22,000**
Elongation per inch after rupture	**inch**	**.1800**
Elongation per inch under strain at elastic limit	**do**	**.00115**
Reduction in diameter at point of rupture	**do**	**.065**
Reduction in area after rupture, per cent of original section		**23.9**
Position of rupture		**".95 from neck**
Character of broken surface		**granular 80 per cent, silky 20 per cent**
Elongation of inch sections		**".20*, ".16**

No. 6513.

Marks, $\overset{A\ 38}{P\ S\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00045	.00035	....	....	
15,000	.00065	.00020	....	....	
18,000	.00085	.00020	....	....	Elastic limit.
20,000	.00105	.00020	.00045	.00045	
21,000	.00135	.00030	....	....	
22,000	.00160	.00025	....	....	
23,000	.00195	.00035	....	....	
24,000	.00295	.00100	....	....	
25,000	.00355	.00060	....	....	
26,000	.00455	.00100	....	....	
27,000	.00560	.00105	....	....	
28,000	.00630	.00070	....	....	
29,000	.00750	.00120	....	....	
30,000	.00875	.00125	....	....	
58,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section....pounds..	58,500
Elastic limit per square inch of original section....do...	18,000
Elongation per inch after rupture....inch..	.2500
Elongation per inch under strain at elastic limit....do...	.00085
Reduction in diameter at point of rupture....do...	.105
Reduction in area after rupture, per cent of original section....	37.1
Position of rupture....	″.45 from neck
Character of broken surface....	silky, granular at center
Elongation of inch sections....	″.16, ″.34*

No. 6487.

Marks, $\overset{A\ 39}{P\ S\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	....	....	
10,000	.00025	.00015	....	....	
15,000	.00045	.00020	....	....	
20,000	.00065	.00020	....	....	
21,000	.00075	.00010	....	....	
22,000	.00090	.00015	....	....	Elastic limit.
23,000	.00160	.00070	....	....	
24,000	.00225	.00065	....	....	
25,000	.00330	.00105	....	....	
26,000	.00435	.00105	....	....	
27,000	.00500	.00065	....	....	
28,000	.00590	.00090	....	....	
29,000	.00670	.00080	....	....	
30,000	.00760	.00090	....	....	
31,000	.00875	.00115	....	....	
32,000	.00960	.00085	....	....	
66,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section .... pounds..	**66,000**
Elastic limit per square inch of original section .... do...	**22,000**
Elongation per inch after rupture .... inch..	**.2250**
Elongation per inch under strain at elastic limit .... do...	**.00090**
Reduction in diameter at point of rupture .... do...	**.065**
Reduction in area after rupture, per cent of original section	**23.9**
Position of rupture	**″.80 from neck**
Character of broken surface	**granular, dull spot at circumference**
Elongation of inch sections	**″.24*, ″.21**

No. 6488.

Marks, A 40 P S 15
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00030	.00015	....	....	
15,000	.00050	.00020	....	....	
17,000	.00060	.00010	....	....	
18,000	.00065	.00005	....	....	
19,000	.00070	.00005	....	....	Elastic limit.
20,000	.00105	.00035	....	....	
21,000	.00145	.00040	....	....	
22,000	.00175	.00030	....	....	
23,000	.00285	.00110	....	....	
24,000	.00410	.00125	....	....	
25,000	.00560	.00150	....	....	
26,000	.00690	.00130	....	....	
27,000	.00755	.00065	....	....	
28,000	.00875	.00120	....	....	
29,000	.00980	.00105	....	....	
30,000	.01125	.00145	....	....	
58,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	58,900
Elastic limit per square inch of original section ....do...	19,000
Elongation per inch after rupture ....inch..	.2600
Elongation per inch under strain at elastic limit ....do...	.00070
Reduction in diameter at point of rupture....................do...	.085
Reduction in area after rupture, per cent of original section....................	30.7
Position of rupture	″.65 from neck
Character of broken surface....................	silky 80 per cent, granular 20 per cent
Elongation of inch sections....................	″.20, ″.32*

No. 6516.

Marks, $\overset{A\ 40}{2\ P\ S\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
15,000	.00050	.00015	....	....	
19,000	.00060	.00010	....	....	Elastic limit.
20,000	.00080	.00020	.00015	.00015	
21,000	.00100	.00020	....	....	
22,000	.00120	.00020	....	....	
23,000	.00160	.00040	....	....	
24,000	.00300	.00140	....	....	
25,000	.00500	.00200	....	....	
26,000	.00635	.00135	....	....	
27,000	.00760	.00125	....	....	
28,000	.00865	.00105	....	....	
60,400	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	60,400
Elastic limit per square inch of original section	do...	19,000
Elongation per inch after rupture	inch..	.2500
Elongation per inch under strain at elastic limit	do...	.00060
Reduction in diameter at point of rupture	do...	.095
Reduction in area after rupture, per cent of original section		34.0
Position of rupture		at middle of stem
Character of broken surface		silky
Elongation of inch sections		″.22, ″.28*

No. 6645.

Marks, $\overset{\text{A 40}}{\text{8 P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00040	.00030	....	....	
20,000	.00070	.00030	....	....	
26,000	.00100	.00030	....	....	Elastic limit.
27,000	.00125	.00025	....	....	
28,000	00400	.00275	....	....	
29,000	.00800	.00400	....	....	
30,000	.01050	.00250	....	....	
31,000	.01250	.00200	....	....	
48,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	48,000
Elastic limit per square inch of original section	do...	26,000
Elongation per inch after rupture	inch..	.0600
Elongation per inch under strain at elastic limit	do...	.00100
Reduction in diameter at point of rupture	do...	.025
Reduction in area after rupture, per cent of original section	do...	9.5
Position of rupture		″.40 from neck
Character of broken surface		dull amorphous, spongy
Elongation of inch sections		″.09*, ″.03

No. 6514.

Marks, $\overset{A\ 41}{P\ S\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
15,000	.00050	.00015	....	....	
20,000	.00065	.00015	0.	....	
25,000	.00085	.00020	....	....	
28,000	.00100	.00015	....	....	
29,000	.00105	.00005	....	....	Elastic limit.
30,000	.00675	.00570	....	....	
31,000	.00950	.00275	....	....	
32,000	.01105	.00155	....	....	
33,000	.01190	.00085	....	....	
34,000	.01300	.00110	....	....	
35,000	.01425	.00125	....	....	
65,150	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section .... pounds..	65,150
Elastic limit per square inch of original section .... do...	29,000
Elongation per inch after rupture .... inch..	.2250
Elongation per inch under strain at elastic limit .... do...	.00105
Reduction in diameter at point of rupture .... do...	.085
Reduction in area after rupture, per cent of original section	30.7
Position of rupture	at middle of stem
Character of broken surface	dull silky
Elongation of inch sections	″.23*, ″.22*

No. 6515.

Marks, $\overset{\text{A 42}}{\text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00025	.00015	....	....	
15,000	.00035	.00010	....	....	
20,000	.00060	.00025	0.	....	Elastic limit.
21,000	.00085	.00025	....	....	
22,000	.00130	.00045	....	....	
23,000	.00220	.00090	....	....	
24,000	.00350	.00130	....	....	
25,000	.00455	.00105	....	....	
60,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	60,100
Elastic limit per square inch of original section	do...	20,000
Elongation per inch after rupture	inch..	.1800
Elongation per inch under strain at elastic limit	do...	.00060
Reduction in diameter at point of rupture	do...	.055
Reduction in area after rupture, per cent of original section		20.5
Position of rupture		″.9 from neck
Character of broken surface		granular, dull flaky spot at circumference
Elongation of inch sections		″.17, ″.19

No. 6533.

Marks, $\overset{A\ 43}{P\ S\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
15,000	.00050	.00015	....	....	
20,000	.00070	.00020	0.	....	
25,000	.00090	.00020	....	....	
30,000	.00105	.00015	....	....	
31,000	.00110	.00005	....	....	
32,000	.00115	.00005	....	....	Elastic limit.
33,000	{ .00135 .00950	.00020 .00815	....	....	
34,000	.01090	.00140	....	....	
35,000	.01150	.00060	....	....	
68,550	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	68,550
Elastic limit per square inch of original section	do...	32,000
Elongation per inch after rupture	inch..	.2200
Elongation per inch under strain at elastic limit	do...	.00115
Reduction in diameter at point of rupture	do...	.075
Reduction in area after rupture, per cent of original section		27.4
Position of rupture		″.75 from neck
Character of broken surface		dull amorphous, in part granular
Elongation of inch sections		″.25*, ″.19

No. 6570.

Marks, $\overset{\text{A 44}}{\text{P S 15}}$

Diameter, ″.505.

Sectional area, .20 square inch.

Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00035	.00020	....	....	
20,000	.00075	.00040	....	....	
25,000	.00090	.00015	....	....	
26,000	.00095	.00005	....	....	
27,000	.00100	.00005	....	....	Elastic limit.
28,000	.00135	.00035	....	....	
29,000	.00285	.00150	....	....	
30,000	.00550	.00265	....	....	
31,000	.00690	.00140	....	....	
32,000	.00750	.00060	....	....	
69,550	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	69,550
Elastic limit per square inch of original section ....do...	27,000
Elongation per inch after rupture ....inch..	.2450
Elongation per inch under strain at elastic limit ....do...	.00100
Reduction in diameter at point of rupture....................do...	.075
Reduction in area after rupture, per cent of original section....................	27.4
Position of rupture	″.95 from neck
Character of broken surface	granular 70 per cent, dull silky 30 per cent
Elongation of inch sections	″.21, ″.28*

No. 6595.

Marks, $\overset{A\ 45}{P\ S\ 15}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
23,000	.00075	.00015	....	....	Elastic limit.
24,000	.00095	.00020	....	....	
25,000	.00100	.00005	....	....	
26,000	.00110	.00010	....	....	
27,000	.00145	.00035	....	....	
28,000	.00690	.00545	....	....	
29,000	.00810	.00120	....	....	
30,000	.00925	.00115	....	....	
62,550	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	62,550
Elastic limit per square inch of original section ....do...	23,000
Elongation per inch after rupture ....inch..	.2550
Elongation per inch under strain at elastic limit ....do...	.00075
Reduction in diameter at point of rupture....................do...	.085
Reduction in area after rupture, per cent of original section....................	30.7
Position of rupture....................	1" from neck
Character of broken surface	dull gray, amorphous
Elongation of inch sections....................	".27*, ".24

No. 6534.

Marks, $\overset{A\ 46}{P\ S\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00065	.00035	....	....	
26,000	.00080	.00015	....	....	
27,000	.00085	.00005	....	....	
28,000	.00090	.00005	....	....	
29,000	.00100	.00010	....	....	Elastic limit.
30,000	.00200	.00100	....	....	
31,000	.00305	.00105	....	....	
32,000	.00375	.00070	....	....	
33,000	.00415	.00040	....	....	
34,000	.00550	.00135	....	....	
70,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	70,100
Elastic limit per square inch of original section ....do...	29,000
Elongation per inch after rupture..inch..	.1800
Elongation per inch under strain at elastic limit..do...	.00100
Reduction in diameter at point of rupture..do...	.055
Reduction in area after rupture, per cent of original section..	20.5
Position of rupture	″.4 from neck
Character of broken surface..	granular 80 per cent, silky 20 per cent
Elongation of inch sections..	″.15, ″.21*

No. 6535.

Marks, $\overset{A\ 47}{P\ S\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	
21,000	.00075	.00010	....	....	
22,000	.00080	.00005	....	....	
23,000	.00085	.00005	....	....	Elastic limit.
24,000	.00115	.00030	....	....	
25,000	.00260	.00145	....	....	
26,000	.00350	.00090	....	....	
27,000	.00455	.00105	....	....	
28,000	.00550	.00095	....	....	
60,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	60,500
Elastic limit per square inch of original section	do...	23,000
Elongation per inch after rupture	inch..	.2200
Elongation per inch under strain at elastic limit	do...	.00085
Reduction in diameter at point of rupture	do...	.075
Reduction in area after rupture, per cent of original section		27.4
Position of rupture		″.9 from neck
Character of broken surface		dull amorphous 70 per cent, granular 30 per cent
Elongation of inch sections		″.25*, ″.19

No. 6571.

Marks, $\overset{A\ 48}{P\ S\ 15}$

Diameter, ″.505.

Sectional area, .20 square inch.

Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	....	....	
10,000	.00040	.00030	....	....	
20,000	.00075	.00035	....	....	
23,000	.00085	.00010	....	....	
24,000	.00090	.00005	....	....	
25,000	.00105	.00005	....	....	Elastic limit.
26,000	.00150	.00045	....	....	
27,000	.00205	.00055	....	....	
28,000	.00295	.00090	....	....	
29,000	.00355	.00060	....	....	
30,000	.00440	.00085	....	....	
69,450	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	69,450
Elastic limit per square inch of original section	do...	25,000
Elongation per inch after rupture	inch..	.1950
Elongation per inch under strain at elastic limit	do...	.00105
Reduction in diameter at point of rupture	do...	.055
Reduction in area after rupture, per cent of original section		20.5
Position of rupture		at middle of stem
Character of broken surface		granular, silky spot at circumference
Elongation of inch sections		″.20*, ″.19*

No. 6572.

Marks, $\overset{\text{A 49}}{\text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00040	.00025	....	....	
15,000	.00080	.00040	.00015	.00015	
20,000	.00095	.00015	....	....	
21,000	.00100	.00005	....	....	Elastic limit.
22,000	.00120	.00020	....	....	
23,000	.00135	.00015	....	....	
24,000	.00150	.00015	....	....	
25,000	.00195	.00045	....	....	
26,000	.00310	.00015	....	....	
27,000	.00405	.00095	....	....	
28,000	.00550	.00145	....	....	
64,800	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	64,800
Elastic limit per square inch of original section ....do...	21,000
Elongation per inch after rupture ....inch..	.1900
Elongation per inch under strain at elastic limit ....do...	.00100
Reduction in diameter at point of rupture....do...	.055
Reduction in area after rupture, per cent of original section....	20.5
Position of rupture	at middle of stem
Character of broken surface	granular 60 per cent, dull silky 40 per cent
Elongation of inch sections....	″.20*, ″.18

No. 6536.

Marks, $\overset{A\ 50}{P\ S\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loans per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00060	.00025	....	....	
25,000	.00090	.00030	....	....	
26,000	.00100	.00010	....	....	Elastic limit.
27,000	.00125	.00025	....	....	
28,000	.00150	.00025	....	....	
29,000	.00200	.00050	....	....	
30,000	.00290	.00090	....	....	
31,000	.00350	.00060	....	....	
32,000	.00425	.00075	....	....	
71,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	71,500
Elastic limit per square inch of original section	do...	26,000
Elongation per inch after rupture	inch..	.1600
Elongation per inch under strain at elastic limit	do...	.00100
Reduction in diameter at point of rupture	do...	.045
Reduction in area after rupture, per cent of original section		16.9
Position of rupture		″.85 from neck
Character of broken surface		granular, silky spot at circumference
Elongation of inch sections		″.15, ″.17*

No. 6537.

Marks, $\overset{\text{A 51}}{\text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.		
10,000	.00035	.00025			
20,000	.00060	.00025			
23,000	.00075	.00015			
24,000	.00085	.00010			Elastic limit.
25,000	.00105	.00020	.00035	.00035	
26,000	.00150	.00045			
27,000	.00225	.00075			
28,000	.00375	.00150			
29,000	.00475	.00100			
30,000	.00575	.00100			
64,450					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	64,450
Elastic limit per square inch of original section	do...	24,000
Elongation per inch after rupture	inch..	.1950
Elongation per inch under strain at elastic limit	do...	.00085
Reduction in diameter at point of rupture	do...	.065
Reduction in area after rupture, per cent of original section		20.5
Position of rupture		″.8 from neck
Character of broken surface		granular
Elongation of inch sections		″.17, ″.22*

No. 6538.

Marks, $\overset{A\ 52}{P\ S\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00065	.00035	....	....	
21,000	.00075	.00010	....	....	
22,000	.00080	.00005	....	....	
23,000	.00085	.00005	....	....	Elastic limit.
24,000	.00125	.00040	....	....	
25,000	.00150	.00125	....	....	
26,000	.00210	.00060	....	....	
27,000	.00295	.00085	....	....	
28,000	.00360	.00065	....	....	
29,000	.00455	.00095	....	....	
30,000	.00580	.00125	....	....	
61,550	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	61,550
Elastic limit per square inch of original section	do	23,000
Elongation per inch after rupture	inch	.1900
Elongation per inch under strain at elastic limit	do	.00085
Reduction in diameter at point of rupture	do	.065
Reduction in area after rupture, per cent of original section		28.9
Position of rupture		1″.1 from neck
Character of broken surface		dull amorphous 80 per cent, granular 20 per cent
Elongation of inch sections		″.18, ″.20*

No. 6539.

Marks, $\overset{A\ 58}{P\ S\ 15}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00070	.00035	....	....	
25,000	.00095	.00025	....	....	Elastic limit.
26,000	.00120	.00025	....	....	
27,000	.00145	.00025	....	....	
28,000	.00215	.00070	....	....	
29,000	.00260	.00045	....	....	
30,000	.00340	.00080	....	....	
70,050	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	70,050
Elastic limit per square inch of original section........do...	25,000
Elongation per inch after rupture........inch..	.1850
Elongation per inch under strain at elastic limit ....do...	.00095
Reduction in diameter at point of rupture........do...	.055
Reduction in area after rupture, per cent of original section........	20.5
Position of rupture	".6 from neck
Character of broken surface........	dull amorphous, granular at the circumference
Elongation of inch sections	".16, ".21*

No. 6540.

Marks, $\genfrac{}{}{0pt}{}{\text{A 54}}{\text{P S 15}}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	
22,000	.00070	.00005	....	....	
23,000	.00075	.00005	....	....	
24,000	.00080	.00005	....	....	
25,000	.00085	.00005	....	....	Elastic limit.
26,000	.00125	.00040	....	....	
27,000	.00200	.00075	....	....	
28,000	.00295	.00095	....	....	
29,000	.00335	.00040	....	....	
30,000	.00415	.00080	....	....	
68,550	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	68,550
Elastic limit per square inch of original section	do...	25,000
Elongation per inch after rupture	inch..	.1800
Elongation per inch under strain at elastic limit	do...	.00085
Reduction in diameter at point of rupture	do...	.055
Reduction in area after rupture, per cent of original section		20.5
Position of rupture		".8 from neck
Character of broken surface		granular 60 per cent, silky 40 per cent
Elongation of inch sections		".15, ".21*

No. 6541.

Marks, $\frac{\text{A 55}}{\text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00060	.00025	....	....	
27,000	.00085	.00025	....	....	Elastic limit.
28,000	.00115	.00030	....	....	
29,000	.00150	.00035	....	....	
30,000	.00210	.00060	....	....	
31,000	.00265	.00055	....	....	
32,000	.00325	.00060	....	....	
33,000	.00405	.00080	....	....	
34,000	.00490	.00085	....	....	
35,000	.00575	.00085	....	....	
70,050	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	70,050
Elastic limit per square inch of original section	do...	27,000
Elongation per inch after rupture	inch..	.1700
Elongation per inch under strain at elastic limit	do...	.00085
Reduction in diameter at point of rupture	do...	.045
Reduction in area after rupture, per cent of original section		16.9
Position of rupture		″.8 from neck
Character of broken surface		granular, silky spot at circumference
Elongation of inch sections		″.16, ″.18*

No. 6542.

Marks, $\overset{\text{A 56}}{\text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00050	.00040	....	....	
20,000	.00085	.00035	....	....	
25,000	.00110	.00025	....	....	Elastic limit.
26,000	.00135	.00025	....	....	
27,000	.00180	.00045	....	....	
28,000	.00205	.00025	....	....	
29,000	.00260	.00055	....	....	
30,000	.00350	.00090	....	....	
73,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	73,000
Elastic limit per square inch of original section ....do...	25,000
Elongation per inch after rupture ....inch..	.1550
Elongation per inch under strain at elastic limit....do...	.00110
Reduction in diameter at point of rupture....do...	.045
Reduction in area after rupture, per cent of original section	16.9
Position of rupture	″.5 from neck
Character of broken surface	granular, silky spot at the circumference
Elongation of inch sections	″.14, ″.17*

No. 6633.

Marks, $\overset{A\ 56}{2\ P\ 8\ 15}$

Diameter, ″.505.

Sectional area, .20 square inch.

Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00020	.00020	0.	....	
10,000	.00040	.00020	....	....	
20,000	.00065	.00025	....	....	
30,000	.00100	.00035	0.	....	
35,000	.00125	.00025	....	....	Elastic limit.
	.01060	.00925	....	....	
36,000	.01115	.00065	....	....	
37,000	.01200	.00085	....	....	
38,000	.01300	.00100	....	....	
39,000	.01425	.00125	....	....	
40,000	.01600	.00125	....	....	
72,350	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section .... pounds..	72,350
Elastic limit per square inch of original section .... do...	35,000
Elongation per inch after rupture .... inch..	.2050
Elongation per inch under strain at elastic limit .... do...	.00125
Reduction in diameter at point of rupture .... do...	.065
Reduction in area after rupture, per cent of original section	20.5
Position of rupture	″.9 from neck
Character of broken surface	granular 60 per cent; silky 40 per cent
Elongation of inch sections	″.19, ″.22*

No. 6543.

Marks, $\overset{A\ 57}{P\ S\ 15}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00040	.00030	....	....	
20,000	.00075	.00035	....	....	
24,000	.00090	.00015	....	....	Elastic limit.
25,000	.00150	.00060	....	....	
26,000	.00205	.00055	....	....	
27,000	.00280	.00075	....	....	
28,000	.00350	.00070	....	....	
29,000	.00450	.00100	....	....	
30,000	.00535	.00085	....	....	
65,400	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ......pounds..	65,400
Elastic limit per square inch of original section ......do...	24,000
Elongation per inch after rupture ......inch..	.1900
Elongation per inch under strain at elastic limit ......do...	.00090
Reduction in diameter at point of rupture ......do...	.075
Reduction in area after rupture, per cent of original section	27.4
Position of rupture	".7 from neck
Character of broken surface	dull amorphous, with granular metal interspersed
Elongation of inch sections	".26*, ".12

No. 6544.

Marks, $\overset{A\ 58}{P\ S\ 15}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	
25,000	.00095	.00030	....	....	
26,000	.00100	.00005	....	....	Elastic limit.
27,000	.00125	.00025	....	....	
28,000	.00155	.00030	....	....	
29,000	.00200	.00045	....	....	
30,000	.00260	.00060	....	....	
31,000	.00345	.00085	....	....	
32,000	.00415	.00070	....	....	
72,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	72,100
Elastic limit per square inch of original section	do	26,000
Elongation per inch after rupture	inch	.1700
Elongation per inch under strain at elastic limit	do	.00100
Reduction in diameter at point of rupture	do	.065
Reduction in area after rupture, per cent of original section		20.5
Position of rupture		1".04 from neck
Character of broken surface		granular, silky spot at circumference
Elongation of inch sections		".18*, ".16

No. 6545.

Marks, $\overset{\text{A 59}}{\text{P S 15}}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent. set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00040	.00030	....	....	
20,000	.00075	.00035	....	....	
25,000	.00095	.00020	....	....	
26,000	.00100	.00005	....	....	Elastic limit.
27,000	.00140	.00040	....	....	
28,000	.00200	.00060	....	....	
29,000	.00255	.00055	....	....	
30,000	.00345	.00090	....	....	
31,000	.00425	.00080	....	....	
32,000	.00485	.00060	....	....	
72,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	72,000
Elastic limit per square inch of original section	do	26,000
Elongation per inch after rupture	inch	.1550
Elongation per inch under strain at elastic limit	do	.00100
Reduction in diameter at point of rupture	do	.045
Reduction in area after rupture, per cent of original section		16.9
Position of rupture		".65 from neck
Character of broken surface		granular, silky spot at circumference
Elongation of inch sections		".14, ".17*

No. 6634.

Marks, $\overset{A\ 59}{2\ P\ S\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00045	.00015	....	....	
30,000	.00090	.00045	0.	....	
31,000	.00095	.00005	....	....	Elastic limit.
32,000	.00150	.00055	....	....	
33,000	.00300	.00150	....	....	
34,000	.00850	.00550	....	....	
35,000	.00925	.00075	....	....	
36,000	.01050	.00125	....	....	
72,050	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	72,050
Elastic limit per square inch of original section	do...	31,000
Elongation per inch after rupture	inch..	.1850
Elongation per inch under strain at elastic limit	do...	.00095
Reduction in diameter at point of rupture	do...	.065
Reduction in area after rupture, per cent of original section		23.9
Position of rupture		″.70 from neck
Character of broken surface		granular 60 per cent, dull silky 40 per cent
Elongation of inch sections		″.16, ″.21*

No. 6546.

Marks, $\substack{\text{A 60}\\ \text{P S 15}}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00040	.00030	....	....	
15,000	.00055	.00015	....	....	
18,000	.00070	.00015	....	....	
19,000	.00075	.00005	....	....	Elastic limit.
20,000	.00095	.00020	....	....	
21,000	.00150	.00055	....	....	
22,000	.00215	.00065	....	....	
23,000	.00295	.00080	....	....	
24,000	.00440	.00145	....	....	
25,000	.00535	.00095	....	....	
56,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	56,000
Elastic limit per square inch of original section	do...	19,000
Elongation per inch after rupture	inch..	.2600
Elongation per inch under strain at elastic limit	do...	.00075
Reduction in diameter at point of rupture	do...	.085
Reduction in area after rupture, per cent of original section		30.7
Position of rupture		".95 from neck
Character of broken surface		dull amorphous
Elongation of inch sections		".29*, ".23

No. 6635.

Marks, $^{A\ 60}_{2\ P\ S\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	....	....	
10,000	.00035	.00025	....	....	
20,000	.00080	.00045	....	....	Elastic limit.
21,000	.00135	.00055	....	....	
22,000	.00200	.00065	....	....	
23,000	.00375	.00175	....	....	
24,000	.00575	.00200	....	....	
25,000	.00750	.00175	....	....	
55,200	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	55,200
Elastic limit per square inch of original section	do...	20,000
Elongation per inch after rupture	inch..	.2800
Elongation per inch under strain at elastic limit	do...	.00080
Reduction in diameter at point of rupture	do...	.115
Reduction in area after rupture, per cent of original section		40.3
Position of rupture		″.50 from neck
Character of broken surface		dull silky, trace of granulation
Elongation of inch sections		″.20, ″.36*

No. 6547.

Marks, $\overset{\text{A 61}}{\text{P S 15}}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00040	.00030	....	....	
20,000	.00075	.00035	....	....	
25,000	.00105	.00030	....	....	Elastic limit.
26,000	.00135	.00030	....	....	
27,000	.00190	.00055	....	....	
28,000	.00245	.00055	....	....	
29,000	.00300	.00055	....	....	
30,000	.00395	.00095	....	....	
68,800	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	68,800
Elastic limit per square inch of original section	do...	25,000
Elongation per inch after rupture	inch..	.1800
Elongation per inch under strain at elastic limit	do...	.00105
Reduction in diameter at point of rupture	do...	.065
Reduction in area after rupture, per cent of original section		23.9
Position of rupture		1". from neck
Character of broken surface		granular 50 per cent, dull amorphous 50 per cent
Elongation of inch sections		".16, ".20*

No. 6548.

Marks, $\overset{\text{A 62}}{\text{P S 15}}$

Diameter, ".505.

Sectional area, .20 square inch.

Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
22,000	.00065	.00005	....	....	
23,000	.00075	.00010	....	....	Elastic limit.
24,000	.00090	.00015	....	....	
25,000	.00105	.00015	....	....	
26,000	.00145	.00040	....	....	
27,000	.00180	.00035	....	....	
28,000	.00215	.00035	....	....	
29,000	.00305	.00090	....	....	
30,000	.00400	.00095	....	....	
69,850	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	69,850
Elastic limit per square inch of original section ....do...	23,000
Elongation per inch after rupture ....inch..	.1900
Elongation per inch under strain at elastic limit ....do...	.00075
Reduction in diameter at point of rupture ....do...	.055
Reduction in area after rupture, per cent of original section	20.5
Position of rupture	".75 from neck
Character of broken surface	granular
Elongation of inch sections	".18, ".20*

No. 6549.

Marks, $\overset{\text{A 63}}{\text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
15,000	.00055	.00020	....	....	
18,000	.00070	.00015	....	....	
19,000	.00080	.00010	....	....	Elastic limit.
20,000	.00255	.00175	....	....	
21,000	.00425	.00170	....	....	
22,000	.00575	.00150	....	....	
23,000	.00700	.00125	....	....	
24,000	.00825	.00125	....	....	
25,000	.01000	.00175	....	....	
50,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	50,900
Elastic limit per square inch of original section	do	19,000
Elongation per inch after rupture	inch	.21000
Elongation per inch under strain at elastic limit	do	.00080
Reduction in diameter at point of rupture	do	.075
Reduction in area after rupture, per cent of original section		27.4
Position of rupture		1″ from neck
Character of broken surface		dull amorphous 80 per cent, coarse granular 20 per cent
Elongation of inch sections		″.23*, ″.19

No. 6636.

Marks, $\overset{A\ 63}{2\ P\ S\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
18,000	.00060	.00025	....	....	
19,000	.00070	.00010	....	....	Elastic limit.
20,000	.00280	.00210	....	....	
21,000	.00500	.00220	....	....	
22,000	.00675	.00175	....	....	
23,000	.00815	.00140	....	....	
24,000	.00975	.00160	....	....	
51,550	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section......pounds..	51,550
Elastic limit per square inch of original section......do...	19,000
Elongation per inch after rupture......inch..	.2550
Elongation per inch under strain at elastic limit......do...	.00070
Reduction in diameter at point of rupture......do...	.105
Reduction in area after rupture, per cent of original section......	37.1
Position of rupture......	″.50 from neck
Character of broken surface......	dull silky, trace of granulation
Elongation of inch sections......	″.32*, ″.19

No. 6573.

Marks, $\overset{\text{A 64}}{\text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00060	.00025	....	....	
30,000	.00100	.00040	....	....	
35,000	.00125	.00025	....	....	Elastic limit.
36,000	.01200	.01075	....	....	
37,000	.01325	.00125	....	....	
38,000	.01425	.00100	....	....	
39,000	.01550	.00125	....	....	
40,000	.01700	.00150	....	....	
68,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	68,100
Elastic limit per square inch of original section	do...	35,000
Elongation per inch after rupture	inch..	.2250
Elongation per inch under strain at elastic limit	do...	.00125
Reduction in diameter at point of rupture	do...	.065
Reduction in area after rupture, per cent of original section		23.9
Position of rupture		1″.1 from neck
Character of broken surface		dull silky
Elongation of inch sections		″.24*, ″.21

No. 6574.

Marks, A 65. P S 15.
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00070	.00035	....	....	
25,000	.00100	.00030	....	....	Elastic limit.
26,000	.00115	.00015	....	....	
27,000	00140	.00025	....	....	
28,000	.00190	.00050	....	....	
29,000	.00575	.00385	....	....	
30,000	.00700	.00125	....	....	
31,000	.00850	.00150	....	....	
65,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	65,900
Elastic limit per square inch of original section	do...	25,000
Elongation per inch after rupture	inch..	.2150
Elongation per inch under strain at elastic limit	do...	.00100
Reduction in diameter at point of rupture	do...	.075
Reduction in area after rupture, per cent of original section		27.4
Position of rupture		".9 from neck
Character of broken surface		granular 20 per cent, dull amorphous 80 per cent
Elongation of inch sections		".24*, ".19

No. 6596.

Marks, $\overset{\text{A 66}}{\text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
30,000	.00100	.00040	....	....	
35,000	.00130	.00030	....	....	Elastic limit.
36,000	.01560	.01430	....	....	
37,000	.01605	.00045	....	....	
38,000	.01650	.00045	....	....	
39,000	.01775	.00125	....	....	
40,000	.01900	.00125	....	....	
67,350	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	67,350
Elastic limit per square inch of original section ....do...	35,000
Elongation per inch after rupture ....inch..	.2150
Elongation per inch under strain at elastic limit ....do...	.00130
Reduction in diameter at point of rupture........do...	.065
Reduction in area after rupture, per cent of original section........	23.9
Position of rupture........	″.6 from neck
Character of broken surface	gray, amorphous
Elongation of inch sections	″.20, ″.23*

No. 6597.

Marks, $\frac{\text{A } 67}{\text{P S } 15}$

Diameter, ″.505.

Sectional area, .20 square inch.

Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00070	.00035	....	....	
30,000	.00105	.00035	....	....	
33,000	.00110	.00005	....	....	Elastic limit.
34,000	.00130	.00020	....	....	
35,000	.01125	.00995	....	....	
36,000	.01275	.00150	....	....	
37,000	.01395	.00120	....	....	
38,000	.01465	.00070	....	....	
69,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	69,900
Elastic limit per square inch of original section	do...	33,000
Elongation per inch after rupture	inch..	.2000
Elongation per inch under strain at elastic limit	do...	.00110
Reduction in diameter at point of rupture	do...	.065
Reduction in area after rupture, per cent of original section		23.9
Position of rupture		at middle of stem
Character of broken surface		gray amorphous 70 per cent, granular 30 per cent
Elongation of inch sections		″.20*, ″.20*

No. 6769.

Marks, $\overset{A\ 68}{P\ S\ 15}$

Diameter, ″.505.

Sectional area, .20 square inch.

Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00005	.00005	0.	....	
10,000	.00030	.00025	....	....	
20,000	.00060	.00030	....	....	
22,000	.00075	.00015	....	....	Elastic limit.
23,000	.00125	.00050	....	....	
24,000	.00205	.00080	....	....	
25,000	.00340	.00135	....	....	
26,000	.00395	.00055	....	....	
27,000	.00480	.00085	....	....	
64,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	64,900
Elastic limit per square inch of original section	do...	22,000
Elongation per inch after rupture	inch..	.2400
Elongation per inch under strain at elastic limit	do...	.00075
Reduction in diameter at point of rupture	do...	.075
Reduction in area after rupture, per cent of original section		27.4
Position of rupture		at middle of stem
Character of broken surface		silky, oblique
Elongation of inch sections		″.22*, ″.26*

No. 6646.

Marks, $\substack{\text{A 69}\\ \text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00040	.00030	....	....	
20,000	.00075	.00035	....	....	
25,000	.00095	.00020	....	....	
26,000	.00105	.00010	....	....	
27,000	.00110	.00005	....	....	Elastic limit.
28,000	.01625	.01515	....	....	
29,000	.01900	.00275	....	....	
30,000	.02050	.00150	....	....	
31,000	.02250	.00200	....	....	
32,000	.02525	.00275	....	....	
54,850	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	54,850
Elastic limit per square inch of original section	do...	27,000
Elongation per inch after rupture	inch..	.3450
Elongation per inch under strain at elastic limit	do...	.00110
Reduction in diameter at point of rupture	do...	.145
Reduction in area after rupture, per cent of original section		49.1
Position of rupture		1″.20 from neck
Character of broken surface		silky
Elongation of inch sections		″.40*, ″.19

No. 6900.

Marks, $^{\text{A 69}}_{\text{P S 15}}$

Diameter, ″.505.

Sectional area, .20 square inch.

Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
25,000	.00080	.00020	....	....	
26,000	.00085	.00005	....	....	
27,000	.00090 .01600	.00005 .01510	....	....	Elastic limit.
28,000	.01750	.00150	....	....	
29,000	.02000	.00250	....	....	
30,000	.02075	.00075	....	....	
31,000	.02250	.00175	....	....	
32,000	.02560	.00310	....	....	
54,050	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	54,050
Elastic limit per square inch of original section ....do...	27,000
Elongation per inch after rupture ....inch..	.3200
Elongation per inch under strain at elastic limit ....do...	.00090
Reduction in diameter at point of rupture ....do...	.135
Reduction in area after rupture, per cent of original section	46.2
Position of rupture	at middle of stem
Character of broken surface	silky
Elongation of inch sections	″.30, ″.34*

No. 6647.

Marks, $\overset{\text{A 70}}{\text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00020	.00010	....	....	
20,000	.00055	.00035	....	....	
30,000	.00090	.00035	....	....	
32,000	.00095	.00005	....	....	
33,000	.00100	.00005	....	....	Elastic limit.
34,000	.01350	.01250	....	....	
35,000	.01425	.00075	....	....	
36,000	.01525	.00100	....	....	
37,000	.01650	.00125	....	....	
38,000	.01800	.00150	....	....	
65,600	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section..........pounds..	65,600
Elastic limit per square inch of original section..........do...	33,000
Elongation per inch after rupture..........inch..	.1750
Elongation per inch under strain at elastic limit..........do...	.00100
Reduction in diameter at point of rupture..........do...	.065
Reduction in area after rupture, per cent of original section..........	23.9
Position of rupture..........	at middle of stem
Character of broken surface..........	dull amorphous, with trace of granulation
Elongation of inch sections..........	″.16*, ″.19*

No. 6648.

Marks, $\overset{\text{A 71}}{\text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load
5,000	.00010	.00010	0.	....	
10,000	.00025	.00015	....	....	
20,000	.00055	.00030	....	....	
27,000	.00080	.00025	....	....	
28,000	.00090	.00010	....	....	Elastic limit
29,000	.00800	.00710	....	....	
30,000	.00900	.00100	....	....	
31,000	.00975	.00075	....	....	
32,000	.01100	.00125	....	....	
33,000	.01265	.00165	....	....	
66,600	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	66,600
Elastic limit per square inch of original section ....do...	28,000
Elongation per inch after rupture ....inch..	.2450
Elongation per inch under strain at elastic limit ....do...	.00090
Reduction in diameter at point of rupture....................do...	.095
Reduction in area after rupture, per cent of original section....................	34.0
Position of rupture	1″ from neck
Character of broken surface	granular, 50 per cent; dull silky, 50 per cent
Elongation of inch sections....................	″.30*, ″.19

No. 6649.

Marks, $\overset{A\ 72}{P\ S\ 15}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00025	.00015	....	....	
20,000	.00060	.00035	....	....	
30,000	.00100	.00040	....	....	
31,000	.00105	.00005	....	....	Elastic limit.
32,000	.01400	.01295	....	....	
33,000	.01500	.00100	....	....	
34,000	.01640	.00140	....	....	
35,000	.01725	.00085	....	....	
36,000	.01850	.00125	....	....	
63,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	63,500
Elastic limit per square inch of original section ....do...	31,000
Elongation per inch after rupture ....inch..	.1950
Elongation per inch under strain at elastic limit ....do...	.00105
Reduction in diameter at point of rupture ....do...	.055
Reduction in area after rupture, per cent of original section	20.5
Position of rupture	".55 from neck
Character of broken surface	granular, silky spot at the circumference
Elongation of inch sections	".20*, ".19

No. 6650.

Marks, $\overset{A\ 73}{P\ S\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00040	.00030	....	....	
20,000	.00080	.00040	....	....	
21,000	.00085	.00005	....	....	Elastic limit.
22,000	.00125	.00040	....	....	
23,000	.00150	.00025	....	....	
24,000	.00170	.00020	....	....	
25,000	.00200	.00030	....	....	
26,000	.00230	.00030	....	....	
27,000	.00260	.00030	....	....	
28,000	.00295	.00035	....	....	
29,000	.00350	.00055	....	....	
30,000	.00425	.00075	....	....	
70,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	70,100
Elastic limit per square inch of original section	do...	21,000
Elongation per inch after rupture	inch..	.1850
Elongation per inch under strain at elastic limit	do...	.00085
Reduction in diameter at point of rupture	do...	.065
Reduction in area after rupture, per cent of original section		23.9
Position of rupture		1″ from neck
Character of broken surface		silky, trace of granulation
Elongation of inch sections		″.17, ″.20

No. 6770.

Marks, $^{\text{A 74}}_{\text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00005	.00005	0.		
10,000	.00035	.00030			
20,000	.00060	.00025			
25,000	.00100	.00040			Elastic limit.
26,000	.00145	.00045			
27,000	.00185	.00040			
28,000	.00260	.00075			
29,000	.00315	.00055			
30,000	.00400	.00085			
73,600					Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	73,600
Elastic limit per square inch of original section ....do...	25,000
Elongation per inch after rupture ....inch..	.1800
Elongation per inch under strain at elastic limit ....do...	.00100
Reduction in diameter at point of rupture....do...	.055
Reduction in area after rupture, per cent of original section....	20.5
Position of rupture....	″.8 from neck
Character of broken surface....	granular 70 per cent, dull silky 30 per cent
Elongation of inch sections....	″.20*, ″.16

No. 6771.

Marks, $\substack{\text{A 75}\\ \text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00005	.00005	0.	....	
10,000	.00025	.00020	....	....	
20,000	.00055	.00030	....	....	
21,000	.00065	.00010	....	....	Elastic limit.
22,000	.00210	.00145	....	....	
23,000	.00550	.00340	....	....	
24,000	.00750	.00200	....	....	
25,000	.00850	.00100	....	....	
26,000	.01000	.00150	....	....	
55,600	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch at original section ......pounds..	55,600
Elastic limit per square inch of original section ......do...	21,000
Elongation per inch after rupture ......inch..	.1250
Elongation per inch under strain at elastic limit ......do...	.00065
Reduction in diameter at point of rupture ......do...	.085
Reduction in area after rupture, per cent of original section	18.2
Position of rupture	1″ from neck
Character of broken surface	coarse granular, silvery luster
Elongation of inch sections	″.11, ″.14*

No. 6797.

Marks, $\overset{A\ 75}{2\ P\ S\ 15}$.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00005	.00005	0.	....	
10,000	.00035	.00030	....	....	
18,000	.00050	.00015	....	....	
19,000	.00060	.00010	....	....	Elastic limit.
20,000	.00295	.00235	....	....	
21,000	.00400	.00105	....	....	
22,000	.00550	.00150	....	....	
23,000	.00655	.00105	....	....	
24,000	.00800	.00145	....	....	
55,600	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	55,600
Elastic limit per square inch of original section	do...	19,000
Elongation per inch after rupture	inch..	.1500
Elongation per inch under strain at elastic limit	do...	.00060
Reduction in diameter at point of rupture	do...	.045
Reduction of area after rupture, per cent of original section		16.9
Position of rupture		1″.08 from neck
Character of broken surface		coarse granular
Elongation of inch sections		″.16*, ″.14

No. 6772.

Marks, $\overset{A\ 76}{P\ S\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00005	.00005	0.	....	
10,000	.00035	.00030	....	....	
20,000	.00080	.00045	....	....	
22,000	.00095	.00015	....	....	Elastic limit.
23,000	.00190	.00095	....	....	
24,000	.00260	.00070	....	....	
25,000	.00350	.00090	....	....	
26,000	.00400	.00050	....	....	
27,000	.00475	.00075	....	....	
73,400	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	73,400
Elastic limit per square inch of original section	do...	22,000
Elongation per inch after rupture	inch..	.2050
Elongation per inch under strain at elastic limit	do...	.00095
Reduction in diameter at point of rupture	do...	.055
Reduction in area after rupture, per cent of original section		20.5
Position of rupture		″.9 from neck
Character of broken surface		granular
Elongation of inch sections		″.19, ″.22*

No. 6773.

Marks, $\overset{\text{A 77}}{\text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00005	.00005	0.	....	
10,000	.00035	.00030	....	....	
20,000	.00060	.00025	....	....	
22,000	.00085	.00025	....	....	
23,000	.00095	.00010	....	....	Elastic limit.
24,000	.00250	.00155	....	....	
25,000	.00450	.00200	....	....	
26,000	.00560	.00110	....	....	
27,000	.00650	.00090	....	....	
28,000	.00775	.00125	....	....	
64,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	64,100
Elastic limit per square inch of original section...do...	23,000
Elongation per inch after rupture ....inch..	.2750
Elongation per inch under strain at elastic limit..do...	.00095
Reduction in diameter at point of rupture...do...	.095
Reduction in area after rupture, per cent of original section..................................	34.0
Position of rupture	1″. from neck
Character of broken surface.....................................	silky 50 per cent, granular 50 per cent
Elongation of inch sections	″.32*, ″.28

No. 6774.

Marks, $\overset{\text{A 78}}{\text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	Elastic limit.
21,000	.00105	.00040	....	....	
22,000	.00180	.00075	....	....	
23,000	.00450	.00270	....	....	
24,000	.00900	.00450	....	....	
25,000	.01000	.00100	....	....	
55,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	55,100
Elastic limit per square inch of original section	do...	20,000
Elongation per inch after rupture	inch..	.3250
Elongation per inch under strain at elastic limit	do...	.00065
Reduction in diameter at point of rupture	do...	.135
Reduction in area after rupture, per cent of original section		46.2
Position of rupture		″.75 from neck
Character of broken surface		silky
Elongation of inch sections		″.23, ″.42*

No. 6997.

Marks, $\overset{\text{A 78}}{\text{2 P S 15}}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00065	.00035	....	....	
25,000	.00090	.00025	....	....	
26,000	.00095	.00005	....	....	Elastic limit.
27,000	.00165	.00070	....	....	
28,000	.00400	.00235	....	....	
29,000	.00550	.00150	....	....	
30,000	.00640	.00090	....	....	
31,000	.00700	.00060	....	....	
72,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	72,100
Elastic limit per square inch of original section ....do...	26,000
Elongation per inch after rupture ....inch...	.2500
Elongation per inch under strain at elastic limit....do...	.00095
Reduction in diameter at point of rupture....do...	.095
Reduction in area after rupture, per cent of original section	34.0
Position of rupture....	1".05 from neck
Character of broken surface	granular 60 per cent, dull silky 40 per cent
Elongation of inch sections	".21, ".29*

No. 6775.

Marks, $^{A\ 79}_{P\ S\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remark .
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00040	.00030	....	....	
17,000	.00060	.00020	....	....	Elastic limit.
18,000	.00475	.00415	....	....	
19,000	.00600	.00125	....	....	
20,000	.00745	.00145	....	....	
21,000	.00995	.00250	....	....	
22,000	.01125	.00130	....	....	
49,850	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	49,850
Elastic limit per square inch of original section	do...	17,000
Elongation per inch after rupture	inch..	.3550
Elongation per inch under strain at elastic limit	do...	.00060
Reduction in diameter at point of rupture	do...	.175
Reduction in area after rupture, per cent of original section		57.2
Position of rupture		″.75 from neck
Character of broken surface		silky
Elongation of inch sections		″.23, ″.48*

No. 6776.

Marks, $\overset{\text{A 80}}{\text{P S 15}}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00040	.00030	....	....	
19,000	.00095	.00055	....	....	Elastic limit.
20,000	.00155	.00060	....	....	
21,000	.00240	.00085	....	....	
22,000	.00365	.00125	....	....	
23,000	.00450	.00085	....	....	
24,000	.00600	.00150	....	....	
59,050	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	59,050
Elastic limit per square inch of original section	do...	19,000
Elongation per inch after rupture	inch..	.2700
Elongation per inch under strain at elastic limit	do...	.00095
Reduction in diameter at point of rupture	do...	.105
Reduction in area after rupture, per cent of original section		37.1
Position of rupture		".75 from neck
Character of broken surface		silky, trace of granulation
Elongation of inch sections		".20, ".34*

No. 6873.

Marks, $\overset{A\ 30}{2\ P\ S\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
30,000	.00100	.00040	....	....	
37,000	.00120	.00020	....	....	
38,000	.00130	.00010	....	....	Elastic limit.
	.00550	.00420	....	....	
39,000	.00800	.00250	....	....	
40,000	.00850	.00050	....	....	
41,000	.00925	.00075	....	....	
42,000	.01050	.00125	....	....	
43,000	.01150	.00100	....	....	
74,150	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	74,150
Elastic limit per square inch of original section	do	38,000
Elongation per inch after rupture	inch	.1900
Elongation per inch under strain at elastic limit	do	.00130
Reduction in diameter at point of rupture	do	.075
Reduction in area after rupture, per cent of original section		27.4
Position of rupture		″.50 from neck
Character of broken surface		dull gray, amorphous
Elongation of inch sections		″.13, ″.25*

No. 6874.

Marks, $\overset{\text{A 81}}{\text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00060	.00025	....	....	
26,000	.00080	.00020	....	....	
27,000	.00090	.00010	....	....	Elastic limit.
28,000	.00130	.00040	....	....	
29,000	.00250	.00120	....	....	
30,000	.00335	.00085	....	....	
31,000	.00430	.00095	....	....	
32,000	.00500	.00070	....	....	
74,550	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	74,550
Elastic limit per square inch of original section	do...	27,000
Elongation per inch after rupture	inch...	.2050
Elongation per inch under strain at elastic limit	do...	.00090
Reduction in diameter at point of rupture	do...	.075
Reduction in area after rupture, per cent of original section		27.4
Position of rupture		″.65 from neck
Character of broken surface		granular 60 per cent, dull silky 40 per cent
Elongation of inch sections		″.18, ″.23*

No. 6855.

Marks, $\overset{A\ 82}{PS\ 15}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00055	.00025	....	....	
30,000	.00110	.00055	....	....	Elastic limit.
	.00200	.00090	....	....	
31,000	.00300	.00100	....	....	
32,000	.00355	.00055	....	....	
33,000	.00450	.00095	....	....	
34,000	.00550	.00100	....	....	
35,000	.00600	.00050	....	....	
75,950	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section........pounds..	75,950
Elastic limit per square inch of original section........do...	30,000
Elongation per inch after rupture........inch..	.1950
Elongation per inch under strain at elastic limit........do...	.00110
Reduction in diameter at point of rupture........do...	.065
Reduction in area after rupture, per cent of original section........	20.5
Position of rupture........	1".19 from neck
Character of broken surface........	granular 80 per cent, silky 20 per cent
Elongation of inch sections........	".21*, ".18

No. 6875.

Marks, $\overset{A\ 88}{P\ S\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
24,000	.00090	.00030	....	....	Elastic limit.
25,000	.00115	.00025	....	....	
26,000	.00175	.00060	....	....	
27,000	.00250	.00075	....	....	
28,000	.00315	.00065	....	....	
29,000	.00400	.00085	....	....	
71,950	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	71,950
Elastic limit per square inch of original section ....do...	24,000
Elongation per inch after rupture ....inch..	.1750
Elongation per inch under strain at elastic limit ....do...	.00090
Reduction in diameter at point of rupture ....do...	.055
Reduction in area after rupture, per cent of original section	20.5
Position of rupture	″.50 from neck
Character of broken surface	dull amorphous, oblique
Elongation of inch sections	″.20, ″.15

No. 6876.

Marks, $\overset{A\ 84}{P\ S\ 15}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.		
10,000	.00030	.00020			
20,000	.00065	.00035			
26,000	.00100	.00035			Elastic limit.
27,000	.00130	.00030			
28,000	.00175	.00045			
29,000	.00230	.00055			
30,000	.00300	.00070			
31,000	.00360	.00060			
74,450					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	74,450
Elastic limit per square inch of original section	do...	26,000
Elongation per inch after rupture	inch..	.1750
Elongation per inch under strain at elastic limit	do...	.00100
Reduction in diameter at point of rupture	do...	.055
Reduction in area after rupture, per cent of original section		20.5
Position of rupture		".7 from neck
Character of broken surface		granular 60 per cent, silky 40 per cent
Elongation of inch sections		".16, ".19*

No. 6856.

Marks, $\overset{A\ 85}{P\ S\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00060	.00025	....	....	
28,000	.00085	.00025	....	....	
29,000	.00095	.00010	....	....	Elastic limit.
30,000	.00150	.00055	....	....	
31,000	.00290	.00140	....	....	
32,000	.00365	.00075	....	....	
33,000	.00430	.00065	....	....	
34,000	.00500	.00070	....	....	
77,450	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	77,450
Elastic limit per square inch of original section	do	29,000
Elongation per inch after rupture	inch	.1350
Elongation per inch under strain at elastic limit	do	.00095
Reduction in diameter at point of rupture	do	.045
Reduction in area after rupture, per cent of original section		16.9
Position of rupture		1″ from neck
Character of broken surface		granular, silky spot at the circumference
Elongation of inch sections		″.15*, ″.12

No. 6857.

Marks, $\overset{\text{A 86}}{\text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00040	.00030	....	....	
20,000	.00060	.00020	....	....	
25,000	.00100	.00040	....	....	
26,000	.00110	.00010	....	....	
27,000	.00115	.00005	....	....	Elastic limit.
28,000	.00150	.00035	....	....	
29,000	.00195	.00045	....	....	
30,000	.00250	.00055	....	....	
31,000	.00300	.00050	....	....	
32,000	.00390	.00090	....	....	
78,600	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	78,600
Elastic limit per square inch of original section	do...	27,000
Elongation per inch after rupture	inch..	.1750
Elongation per inch under strain at elastic limit	do...	.00115
Reduction in diameter at point of rupture	do...	.055
Reduction in area after rupture, per cent of original section		20.5
Position of rupture		″.9 from neck
Character of broken surface		granular, silky spot at the circumference
Elongation of inch sections		″.16, ″.19*

No. 6858.

Marks, $\overset{\text{A 87}}{\text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
24,000	.00085	.00025	....	....	Elastic limit.
25,000	.00150	.00065	....	....	
26,000	.00450	.00300	....	....	
27,000	.00575	.00125	....	....	
28,000	.00640	.00065	....	....	
29,000	.00750	.00110	....	....	
65,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	65,500
Elastic limit per square inch of original section	do...	24,000
Elongation per inch after rupture	inch..	.2700
Elongation per inch under strain at elastic limit	do...	.00085
Reduction in diameter at point of rupture	do...	.105
Reduction in area after rupture, per cent of original section		87.1
Position of rupture		″.85 from neck
Character of broken surface		silky
Elongation of inch sections		″.21, ″.33*

No. 6877.

Marks, $\substack{A\ 88\\ P\ S\ 15}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
30,000	.00100	.00040	....	....	Elastic limit.
31,000	.00200	.00100	....	....	
32,000	.00400	.00200	....	....	
33,000	.00475	.00075	....	....	
34,000	.00525	.00050	....	....	
35,000	.00650	.00125	....	....	
76,200	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	76,200
Elastic limit per square inch of original section ....do...	30,000
Elongation per inch after rupture ....inch..	.1900
Elongation per inch under strain at elastic limit ....do...	.00100
Reduction in diameter at point of rupture....................do...	.055
Reduction in area after rupture, per cent of original section	20.5
Position of rupture....................	".70 from neck
Character of broken surface	granular, dull silky spot at the circumference
Elongation of inch sections	".19, ".19

No. 6878.

Marks, $\overset{A\ 89}{P\ S\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
25,000	.00060	.00020	....	....	Elastic limit.
26,000	.00100	.00020	....	....	
27,000	.00300	.00200	....	....	
28,000	.00360	.00060	....	....	
29,000	.00460	.00100	....	....	
30,000	.00520	.00060	....	....	
76,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	76,000
Elastic limit per square inch of original section ....do...	25,000
Elongation per inch after rupture ....inch..	.1800
Elongation per inch under strain at elastic limit ....do...	.00080
Reduction in diameter at point of rupture ....do...	.065
Reduction in area after rupture, per cent of original section	23.9
Position of rupture	″.55 from neck
Character of broken surface	granular
Elongation of inch sections	″.20*, ″.16

No. 6859.

Marks, $\overset{\text{A 90}}{\text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	
28,000	.00100	.00035	....	....	Elastic limit.
29,000	.00150	.00050	....	....	
30,000	.00195	.00045	....	....	
31,000	.00260	.00065	....	....	
32,000	.00360	.00100	....	....	
33,000	.00460	.00100	....	....	
75,700	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	75,700
Elastic limit per square inch of original section ....do...	28,000
Elongation per inch after rupture ....inch..	.2050
Elongation per inch under strain at elastic limit ....do...	.00100
Reduction in diameter at point of rupture ....do...	.065
Reduction in area after rupture, per cent of original section	23.9
Position of rupture	1″.17 from neck
Character of broken surface	granular, dull flaky spot at the circumference
Elongation of inch sections	″.18, ″.23*

No. 6860.

Marks, $\overset{A\ 91}{P\ S\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
25,000	.00095	.00035	....	....	Elastic limit.
26,000	.00120	.00025	....	....	
27,000	.00215	.00095	....	....	
28,000	.00290	.00075	....	....	
29,000	.00385	.00095	....	....	
30,000	.00460	.00075	....	....	
70,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	70,500
Elastic limit per square inch of original section	do...	25,000
Elongation per inch after rupture	inch..	.2100
Elongation per inch under strain at elastic limit	do...	.00095
Reduction in diameter at point of rupture	do...	.065
Reduction in area after rupture, per cent of original section		23.9
Position of rupture		1″.14 from neck
Character of broken surface		granular, silky spot at the circumference
Elongation of inch sections		″.22*, ″.20

No. 6861.

Marks, $\overset{\text{A 92}}{\text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
19,000	.00065	.00035	....	....	Elastic limit.
20,000	.00145	.00080	....	....	
21,000	.00200	.00055	....	....	
22,000	.00255	.00055	....	....	
23,000	.00365	.00110	....	....	
24,000	.00510	.00145	....	....	
55,400	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	55,400
Elastic limit per square inch of original section	do...	19,000
Elongation per inch after rupture	inch..	.2650
Elongation per inch under strain at elastic limit	do...	.00065
Reduction in diameter at point of rupture	do...	.145
Reduction in area after rupture, per cent of original section		49.1
Position of rupture		1″ from neck
Character of broken surface		silky
Elongation of inch sections		″.20, ″.33*

No. 6862.

Marks, $\overset{A\ 93}{P\ S\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
17,000	.00060	.00025	....	....	Elastic limit.
18,000	.00250	.00190	....	....	
19,000	.00450	.00200	....	....	
20,000	.00610	.00160	....	....	
21,000	.00790	.00180	....	....	
22,000	.00915	.00125	....	....	
51,600	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	**pounds..**	**51,600**
Elastic limit per square inch of original section	**do...**	**17,000**
Elongation per inch after rupture	**inch..**	**.3650**
Elongation per inch under strain at elastic limit	**do...**	**.00060**
Reduction in diameter at point of rupture	**do...**	**.155**
Reduction in area after rupture, per cent of original section		**51.9**
Position of rupture		**1″.15 from neck**
Character of broken surface		**dull silky**
Elongation of inch sections		**″.30, ″.43***

No. 6998.

Marks, $\overset{\text{A 93}}{\text{2 P 8 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.		
10,000	.00030	.00020			
20,000	.00065	.00035			
29,000	.00095	.00030			Elastic limit.
30,000	.00725	.00630			
31,000	.00800	.00075			
32,000	.00925	.00125			
33,000	.01000	.00075			
34,000	.01090	.00090			
71,100					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	71,100
Elastic limit per square inch of original section	do	29,000
Elongation per inch after rupture	inch	.2100
Elongation per inch under strain at elastic limit	do	.00095
Reduction in diameter at point of rupture	do	.075
Reduction in area after rupture, per cent of original section		27.4
Position of rupture		1″ from neck
Character of broken surface		granular, silky spot at the circumference
Elongation of inch sections		″.20, ″.22

No. 6819.

Marks, $\genfrac{}{}{0pt}{}{\text{A 95}}{\text{P S 15}}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00035	.00020	....	....	
20,000	.00075	.00040	....	....	
22,000	.00090	.00015	....	....	
23,000	.00100	.00010	....	....	
24,000	.00110	.00010	....	....	Elastic limit.
25,000	.00140	.00030	....	....	
26,000	.00165	.00025	....	....	
27,000	.00195	.00030	....	....	
28,000	.00260	.00065	....	....	
29,000	.00340	.00080	....	....	
30,000	.00400	.00060	....	....	
31,000	.00550	.00150	....	....	
32,000	.00610	.00060	....	....	
33,000	.00750	.00140	....	....	
64,050	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	64,050
Elastic limit per square inch of original section ....do...	24,000
Elongation per inch after rupture ....inch..	.2750
Elongation per inch under strain at elastic limit ....do...	.00110
Reduction in diameter at point of rupture........do...	.105
Reduction in area after rupture, per cent of original section	37.1
Position of rupture........	".70 from neck
Character of broken surface........	silky 70 per cent, granular 30 per cent
Elongation of inch sections........	".33*, ".22

No. 6863.

Marks, $\overset{\text{A 96}}{\text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00070	.00035	....	....	Elastic limit.
21,000	.00115	.00045	....	....	
22,000	.00250	.00135	....	....	
23,000	.00400	.00150	....	....	
24,000	.00500	.00100	....	....	
25,000	.00625	.00125	....	....	
60,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	60,900
Elastic limit per square inch of original section ....do...	20,000
Elongation per inch after rupture ....inch..	.3000
Elongation per inch under strain at elastic limit ....do...	.00070
Reduction in diameter at point of rupture ....do...	.135
Reduction in area after rupture, per cent of original section	46.2
Position of rupture	″.95 from neck
Character of broken surface	silky
Elongation of inch sections	″.21, ″.39*

No. 6999.

Marks, $\overset{\text{A 96}}{\text{2 P S 15}}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00065	.00035	....	....	
28,000	.00100	.00035	....	....	
29,000	.00105	.00005	....	....	Elastic limit.
30,000	.00145	.00040	....	....	
31,000	.00165	.00020	....	....	
32,000	.00185	.00020	....	....	
33,000	.00290	.00105	....	....	
34,000	.00365	.00075	....	....	
35,000	.00490	.00125	....	....	
80,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	80,500
Elastic limit per square inch of original section	do...	29,000
Elongation per inch after rupture	inch..	.1850
Elongation per inch under strain at elastic limit	do...	.00105
Reduction in diameter at point of rupture	do...	.065
Reduction in area after rupture, per cent of original section		20.5
Position of rupture		1".06 from neck
Character of broken surface		granular 70 per cent, silky 30 per cent
Elongation of inch sections		".18, ".19*

No. 6820.

Marks, $\overset{A\ 97}{P\ S\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00085	.00050	....	....	
21,000	.00095	.00010	....	....	
22,000	.00100	.00005	....	....	
23,000	.00110	.00010	....	....	Elastic limit.
24,000	.00135	.00025	....	....	
25,000	.00150	.00015	....	....	
26,000	.00175	.00025	....	....	
27,000	.00205	.00030	....	....	
28,000	.00300	.00095	....	....	
29,000	.00425	.00125	....	....	
30,000	.00500	.00075	....	....	
70,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	70,100
Elastic limit per square inch of original section	do...	23,000
Elongation per inch after rupture	inch..	.2300
Elongation per inch under strain at elastic limit	do...	.00110
Reduction in diameter at point of rupture	do...	.085
Reduction in area after rupture, per cent of original section		30.7
Position of rupture		1″.10 from neck
Character of broken surface		fine granular, silky spot at the circumference
Elongation of inch sections		″.20, ″.26*

No. 6821.

Marks, $\overset{\text{A 98}}{\text{P S 15}}$

Diameter, ″.505.

Sectional area, .20 square inch.

Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00020	.00010	....	....	
20,000	.00060	.00040	....	....	
22,000	.00065	.00005	....	....	
23,000	.00070	.00005	....	....	
24,000	.00080	.00010	....	....	
25,000	.00090	.00010	....	....	
26,000	.00100	.00010	....	....	
27,000	.00105	.00005	....	....	Elastic limit.
28,000	.00120	.00015	....	....	
29,000	.00150	.00030	....	....	
30,000	.00165	.00015	....	....	
31,000	.00200	.00035	....	....	
32,000	.00240	.00040	....	....	
33,000	.00305	.00065	....	....	
34,000	.00350	.00045	....	....	
35,000	.00425	.00075	....	....	
36,000	.00500	.00075	....	....	
58,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	58,100
Elastic limit per square inch of original section	do.	27,000
Elongation per inch after rupture	inch	.0500
Elongation per inch under strain at elastic limit	do.	.00105
Reduction in diameter at point of rupture	do.	.015
Reduction in area after rupture, per cent of original section		5.7
Position of rupture		″.30 from neck
Character of broken surface		granular, seam near the circumference
Elongation of inch sections		″.04, ″.06*

No. 7186.

Marks, $\overset{A\ 98}{2\ P\ S\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00035	.00020	....	....	
20,000	.00070	.00035	....	....	
30,000	.00110	.00040	....	....	
31,000	.00115	.00005	....	....	
32,000	.00120	.00005	....	....	Elastic limit.
33,000	00140	.00020	....	....	
34,000	.00950	.00810	....	....	
35,000	.01000	.00050	....	....	
36,000	.01050	.00050	....	....	
37,000	.01150	.00100	....	....	
71,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	71,500
Elastic limit per square inch of original section	do...	32,000
Elongation per inch after rupture	inch..	.2050
Elongation per inch under strain at elastic limit	do...	.00120
Reduction in diameter at point of rupture	do...	.055
Reduction in area after rupture, per cent of original section		20.5
Position of rupture		″.98 from neck
Character of broken surface		granular, silky spot at circumference
Elongation of inch sections		″.20*, ″.21

No. 6822.

Marks, $\overset{\text{A 99}}{\text{P S 15}}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00025	.00015	....	....	
20,000	.00085	.00060	....	....	
21,000	.00095	.00010	....	....	Elastic limit, not well defined.
22,000	.00115	.00020	....	....	
23,000	.00130	.00015	....	....	
24,000	.00165	.00035	....	....	
25,000	.00200	.00035	....	....	
26,000	.00305	.00105	....	....	
27,000	.00345	.00040	....	....	
28,000	.00415	.00070	....	....	
29,000	.00495	.00080	....	....	
30,000	.00565	.00070	....	....	
31,000	.00660	.00095	....	....	
32,000	.00755	.00095	....	....	
33,000	.00815	.00060	....	....	
69,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	69,500
Elastic limit per square inch of original section, not well defined ....do...	21,000
Elongation per inch after rupture ....inch..	.2250
Elongation per inch under strain at elastic limit ....do...	.00095
Reduction in diameter at point of rupture..do...	.075
Reduction in area after rupture, per cent of original section	27.4
Position of rupture	".90 from neck
Character of broken surface	granular 60 per cent, dull silky 40 per cent
Elongation of inch sections	".26*, ".19

No. 7166.

Marks, $\overset{A}{2}\,\overset{99}{P}\,S\,15$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00035	.00020	....	....	
20,000	.00070	.00035	....	....	
30,000	.00115	.00045	....	....	
31,000	.00115	0.	....	....	Elastic limit.
32,000	.01310	.01195	....	....	
33,000	.01325	.00015	....	....	
34,000	.01360	.00035	....	....	
35,000	.01450	.00090	....	....	
36,000	.01625	.00175	....	....	
37,000	.01760	.00135	....	....	
63,400	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	63,400
Elastic limit per square inch of original section	do...	31,000
Elongation per inch after rupture	inch..	.2250
Elongation per inch under strain at elastic limit	do...	.00115
Reduction in diameter at point of rupture	do...	.085
Reduction in area after rupture, per cent of original section		30.7
Position of rupture		1″.18 from neck
Character of broken surface		silky
Elongation of inch sections		″.27*, ″.18

No. 6850.

Marks, $^{\text{A 100}}_{\text{P S 15}}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00060	.00025	....	....	
21,000	.00070	.00010	....	....	Elastic limit.
22,000	.00095	.00025	....	....	
23,000	.00450	.00355	....	....	
24,000	.00600	.00150	....	....	
25,000	.00650	.00050	....	....	
26,000	.00800	.00150	....	....	
62,550	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section .... pounds..	62,550
Elastic limit per square inch of original section .... do...	21,000
Elongation per inch after rupture .... inch..	.1900
Elongation per inch under strain at elastic limit .... do...	.00070
Reduction in diameter at point of rupture .... do...	.055
Reduction in area after rupture, per cent of original section	20.5
Position of rupture	".6 from neck
Character of broken surface	granular, flaky spot at the circumference
Elongation of inch sections	".20*, ".18

No. 7000.

Marks, $\genfrac{}{}{0pt}{}{\text{A 100}}{\text{2 P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00070	.00035	....	....	
23,000	.00085	.00015	....	....	Elastic limit.
24,000	.00140	.00055	....	....	
25,000	.00170	.00030	....	....	
26,000	.00350	.00180	....	....	
27,000	.00750	.00400	....	....	
28,000	.00825	.00075	....	....	
66,450	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	66,450
Elastic limit per square inch of original section ....do...	23,000
Elongation per inch after rupture ....inch..	.2700
Elongation per inch under strain at elastic limit ....do...	.00085
Reduction in diameter at point of rupture ....do...	.095
Reduction in area after rupture, per cent of original section	34.0
Position of rupture	1″.08 from neck
Character of broken surface	dull silky, oblique
Elongation of inch sections	″.24, ″.30*

No. 6832.

Marks, $\frac{\text{A 101}}{\text{P S 15}}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.		
10,000	.00040	.00025			
20,000	.00075	.00035			
22,000	.00090	.00015			
23,000	.00095	.00005			Elastic limit.
24,000	.00115	.00020			
25,000	.00145	.00030			
26,000	.00200	.00055			
27,000	.00300	.00100			
28,000	.00390	.00090			
29,000	.00450	.00060			
30,000	.00535	.00085			
31,000	.00640	.00105			
32,000	.00725	.00085			
33,000	.00805	.00080			
34,000	.00900	.00095			
69,400					Tensile strength.

General summary.

Tensile strength per square inch of original section......pounds..	69,400
Elastic limit per square inch of original section......do...	23,000
Elongation per inch after rupture......inch..	.2300
Elongation per inch under strain at elastic limit......do...	.00095
Reduction in diameter at point of rupture......do...	.075
Reduction in area after rupture, per cent of original section......	27.4
Position of rupture......	1".10 from neck
Character of broken surface......	granular 80 per cent, silky 20 per cent
Elongation of inch sections......	".20, ".26*

No. 6864.

Marks, $\overset{\text{A 102}}{\text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00040	.00030	....	....	
20,000	.00085	.00045	....	....	
21,000	.00095	.00010	....	....	Elastic limit.
22,000	.00150	.00055	....	....	
23,000	.00200	.00050	....	....	
24,000	.00260	.00060	....	....	
25,000	.00350	.00090	....	....	
26,000	.00450	.00100	....	....	
65,550	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	65,550
Elastic limit per square inch of original section	do...	21,000
Elongation per inch after rupture	inch..	.2850
Elongation per inch under strain at elastic limit	do...	.00095
Reduction in diameter at point of rupture	do...	.115
Reduction in area after rupture, per cent of original section		40.3
Position of rupture		″.75 from neck
Character of broken surface		dull silky, oblique
Elongation of inch sections		″.22, ″.35*

No. 7001.

Marks, $\overset{\text{A 102}}{\text{2 P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00040	.00030	....	....	
20,000	.00070	.00030	....	....	
28,000	.00095	.00025	....	....	
29,000	.00100	.00005	....	....	Elastic limit.
30,000	.00140	.00040	....	....	
31,000	.00180	.00040	....	....	
32,000	.00550	.00370	....	....	
33,000	.00650	.00100	....	....	
34,000	.00725	.00075	....	....	
75,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	75,500
Elastic limit per square inch of original section	do...	29,000
Elongation per inch after rupture	inch..	.1400
Elongation per inch under strain at elastic limit	do...	.00100
Reduction in diameter at point of rupture	do...	.035
Reduction in area after rupture, per cent of original section		13.2
Position of rupture		″.95 from neck
Character of broken surface		granular, silky spot at the circumference
Elongation of inch sections		″.15*, ″.18

No. 6865.

Marks, $\frac{\text{A }108}{\text{P S }15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00075	.00040	....	....	Elastic limit.
21,000	.00100	.00025	....	....	
22,000	.00130	.00030	....	....	
23,000	.00195	.00065	....	....	
24,000	.00265	.00070	....	....	
25,000	.00355	.00090	....	....	
65,250	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	65,250
Elastic limit per square inch of original section ....do...	20,000
Elongation per inch after rupture ....inch..	.2600
Elongation per inch under strain at elastic limit ....do...	.00075
Reduction in diameter at point of rupture ....do...	.105
Reduction in area after rupture, per cent of original section	37.1
Position of rupture	″.8 from neck
Character of broken surface	granular 60 per cent, silky 40 per cent
Elongation of inch sections	″.18, ″.34*

No. 7002.

Marks, $\overset{\text{A 103}}{\text{2 P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
24,000	.00085	.00025	....	....	Elastic limit.
25,000	.00150	.00065	....	....	
26,000	.00400	.00250	....	....	
27,000	.00500	.00100	....	....	
28,000	.00575	.00075	....	....	
29,000	.00665	.00090	....	....	
69,800	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	69,800
Elastic limit per square inch of original section	do...	24,000
Elongation per inch after rupture	inch..	.2700
Elongation per inch under strain at elastic limit	do...	.00085
Reduction in diameter at point of rupture	do...	.095
Reduction in area after rupture, per cent of original section		34.0
Position of rupture		″.85 from neck
Character of broken surface		granular 60 per cent, silky flaky 40 per cent
Elongation of inch sections		″.23, ″.31*

No. 6866.

Marks, $\substack{\text{A 104}\\ \text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
24,000	.00090	.00030	....	....	Elastic limit.
25,000	.00455	.00365	....	....	
26,000	.00550	.00095	....	....	
27,000	.00645	.00095	....	....	
28,000	.00710	.00065	....	....	
29,000	.00800	.00090	....	....	
66,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section .... pounds..	66,900
Elastic limit per square inch of original section .... do...	24,000
Elongation per inch after rupture .... inch..	.2300
Elongation per inch under strain at elastic limit .... do...	.00090
Reduction in diameter at point of rupture .... do...	.065
Reduction in area after rupture, per cent of original section	23.9
Position of rupture	1″.07 from neck
Character of broken surface	granular
Elongation of inch sections	″.22, ″.24*

No. 6867.

Marks, $\genfrac{}{}{0pt}{}{\text{A 105}}{\text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.		
10,000	.00035	.00025			
20,000	.00080	.00045			Elastic limit.
21,000	.00100	.00020			
22,000	.00145	.00045			
23,000	.00215	.00070			
24,000	.00310	.00095			
25,000	.00400	.00090			
65,500					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	65,500
Elastic limit per square inch of original section	do...	20,000
Elongation per inch after rupture	inch..	.2500
Elongation per inch under strain at elastic limit	do...	.00080
Reduction in diameter at point of rupture	do...	.095
Reduction in area after rupture, per cent of original section		34.0
Position of rupture		1″ from neck
Character of broken surface		silky, granular center
Elongation of inch sections		″.22, ″.28*

No. 6879.

Marks, $\substack{\text{A 106}\\ \text{P S 15}}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00060	.00025	....	....	
28,000	.00105	.00045	....	....	Elastic limit.
29,000	.00350	.00245	....	....	
30,000	.00450	.00100	....	....	
31,000	.00550	.00100	....	....	
32,000	.00595	.00045	....	....	
33,000	.00690	.00095	....	....	
72,600	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	72,600
Elastic limit per square inch of original section	do...	28,000
Elongation per inch after rupture	inch..	.2350
Elongation per inch under strain at elastic limit	do...	.00105
Reduction in diameter at point of rupture	do...	.095
Reduction in area after rupture, per cent of original section		34.0
Position of rupture		1" from neck
Character of broken surface		granular 60 per cent, silky 40 per cent
Elongation of inch sections		".26*, ".21

No. 6880.

Marks, $\overset{\text{A 107}}{\text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00060	.00025	....	....	
24,000	.00095	.00035	....	....	
25,000	.00105	.00010	....	....	Elastic limit.
26,000	.00150	.00045	....	....	
27,000	.00450	.00300	....	....	
28,000	.00550	.00100	....	....	
29,000	.00650	.00100	....	....	
30,000	.00750	.00100	....	....	
69,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section.....pounds..	69,500
Elastic limit per square inch of original section.....do...	25,000
Elongation per inch after rupture.....inch..	.2250
Elongation per inch under strain at elastic limit.....do...	.00105
Reduction in diameter at point of rupture.....do...	.075
Reduction in area after rupture, per cent of original section.....	27.4
Position of rupture.....	1″.1 from neck
Character of broken surface.....	granular, silky spot at the circumference
Elongation of inch sections.....	″.25*, ″.20

No. 6881.

Marks, $^{\text{A 108}}_{\text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00060	.00025	....	....	
25,000	.00100	.00040	....	....	Elastic limit.
26,000	.00125	.00025	....	....	
27,000	.00195	.00070	....	....	
28,000	.00285	.00090	....	....	
29,000	.00350	.00065	....	....	
30,000	.00450	.00100	....	....	
72,950	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	72,950
Elastic limit per square inch of original section	do...	25,000
Elongation per inch after rupture	inch..	.2250
Elongation per inch under strain at elastic limit	do...	.00100
Reduction in diameter at point of rupture	do...	.075
Reduction in area after rupture, per cent of original section		27.4
Position of rupture		at middle of stem
Character of broken surface		granular
Elongation of inch sections		″.19, ″.26*

No. 6882.

Marks, $\overset{\text{A 109}}{\text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00060	.00025	....	....	
28,000	.00095	.00035	....	....	Elastic limit.
29,000	.00140	.00045	....	....	
30,000	.00750	.00610	....	....	
31,000	.00850	.00100	....	....	
32,000	.00900	.00050	....	....	
33,000	.01000	.00100	....	....	
70,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	70,900
Elastic limit per square inch of original section	do...	28,000
Elongation per inch after rupture	inch..	.2500
Elongation per inch under strain at elastic limit	do...	.00095
Reduction in diameter at point of rupture	do...	.075
Reduction in area after rupture, per cent of original section		27.4
Position of rupture		at middle of stem
Character of broken surface		granular 60 per cent, silky 40 per cent
Elongation of inch sections		″.25*, ″.25*

No. 6883.

Marks, $\overset{\text{A 110}}{\text{P S 15}}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
25,000	.00085	.00025	....	....	
27,000	.00100	.00015	....	....	Elastic limit.
28,000	.00825	.00725	....	....	
29,000	.00875	.00050	....	....	
30,000	.01015	.00140	....	....	
31,000	.01095	.00080	....	....	
32,000	.01160	.00065	....	....	
66,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	66,500
Elastic limit per square inch of original section ....do...	27,000
Elongation per inch after rupture ....inch..	.2500
Elongation per inch under strain at elastic limit....do...	.00100
Reduction in diameter at point of rupture....do...	.085
Reduction in area after rupture, per cent of original section	30.7
Position of rupture	".9 from neck
Character of broken surface	granular 70 per cent, silky 30 per cent
Elongations of inch sections	".29*, ".21

No. 6884.

Marks, $\substack{\text{A 111}\\ \text{P S 15}}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00060	.00025	....	....	
30,000	.00100	.00040	....	....	
35,000	.00125	.00025	....	....	Elastic limit.
	.00700	.00575	....	....	
36,000	.00780	.00080	....	....	
37,000	.00815	.00035	....	....	
38,000	.00900	.00085	....	....	
39,000	.00950	.00050	....	....	
40,000	.01050	.00100	....	....	
82,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	82,000
Elastic limit per square inch of original section	do...	35,000
Elongation per inch after rupture	inch..	.1900
Elongation per inch under strain at elastic limit	do...	.00125
Reduction in diameter at point of rupture	do...	.055
Reduction in area after rupture, per cent of original section		20.5
Position of rupture		".50 from neck
Character of broken surface		granular
Elongation of inch sections		".17, ".21*

No. 6949.

Marks, $\substack{\text{A 112}\\\text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
26,000	.00090	.00030	....	....	Elastic limit.
27,000	.00135	.00045	....	....	
28,000	.00300	.00165	....	....	
29,000	.00390	.00090	....	....	
30,000	.00450	.00060	....	....	
31,000	.00535	.00085	....	....	
72,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section............pounds..	72,900
Elastic limit per square inch of original section............do...	26,000
Elongation per inch after rupture............inch..	.2200
Elongation per inch under strain at elastic limit............do...	.00090
Reduction in diameter at point of rupture............do...	.075
Reduction in area after rupture, per cent of original section............	27.4
Position of rupture............	1″ from neck
Character of broken surface............	granular, silky spot at the circumference
Elongation of inch sections............	″.23*, ″.21

No. 7003.

Marks, $\substack{\text{A 112}\\ \text{2 P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00035	.00020	....	....	
20,000	.00070	.00035	....	....	
24,000	.00095	.00025	....	....	Elastic limit.
25,000	.00150	.00055	....	....	
26,000	.00185	.00035	....	....	
27,000	.00220	.00035	....	....	
28,000	.00300	.00080	....	....	
29,000	.00350	.00050	....	....	
30,000	.00425	.00075	....	....	
73,450	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	73,450
Elastic limit per square inch of original section ....do...	24,000
Elongation per inch after rupture ....inch..	.1500
Elongation per inch under strain at elastic limit ....do...	.00095
Reduction in diameter at point of rupture ....do...	.045
Reduction in area after rupture, per cent of original section	16.9
Position of rupture	″.70 from neck
Character of broken surface	granular 80 per cent, silky 20 per cent
Elongation of inch sections	″.13, ″.17*

No. 6971.

Marks, $\overset{\text{A 113}}{\text{PS 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	
28,000	.00100	.00035	....	....	Elastic limit.
29,000	.00950	.00850	....	....	
30,000	.01005	.00055	....	....	
31,000	.01100	.00095	....	....	
32,000	.01200	.00100	....	....	
33,000	.01310	.00110	....	....	
65,350	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	65,350
Elastic limit per square inch of original section	do...	28,000
Elongation per inch after rupture	inch..	.1800
Elongation per inch under strain at elastic limit	do...	.00100
Reduction in diameter at point of rupture	do...	.045
Reduction in area after rupture, per cent of original section		16.9
Position of rupture		″.8 from neck
Character of broken surface		granular, dull silky spot at the circumference
Elongation of inch sections		″.18*, ″.18

No. 6966.

Marks, $^{\text{A 114}}_{\text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	
28,000	.00095	.00030	....	....	Elastic limit.
29,000	.00780	.00685	....	....	
30,000	.00850	.00070	....	....	
31,000	.00925	.00075	....	....	
32,000	.01010	.00085	....	....	
33,000	.01150	.00140	....	....	
68,450	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	68,450
Elastic limit per square inch of original section	do...	28,000
Elongation per inch after rupture	inch..	.1150
Elongation per inch under strain at elastic limit	do...	.00095
Reduction in diameter at point of rupture	do...	.065
Reduction in area after rupture, per cent of original section		13.2
Position of rupture		″.95 from neck
Character of broken surface		granular, silky spot at the circumference
Elongation of inch sections		″.11, ″.12*

No. 6967.

Marks, $\overset{\text{A 115}}{\text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	
23,000	.00085	.00020	....	....	
24,000	.00095	.00010	....	....	Elastic limit.
25,000	.00450	.00355	....	....	
26,000	.00535	.00085	....	....	
27,000	.00600	.00065	....	....	
28,000	.00675	.00075	....	....	
29,000	.00760	.00085	....	....	
68,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	68,900
Elastic limit per square inch of original section ....do...	24,000
Elongation per inch after rupture ....inch..	.2500
Elongation per inch under strain at elastic limit ....do...	.00095
Reduction in diameter at point of rupture....................do...	.085
Reduction in area after rupture, per cent of original section....................	30.7
Position of rupture	1″.2 from neck
Character of broken surface....................	granular 70 per cent, dull silky 30 per cent
Elongation of inch sections....................	″.27*, ″.23

No. 6968.

Marks, $\frac{\text{A 116}}{\text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	
28,000	.00095	.00030	....	....	Elastic limit.
29,000	.00235	.00140	....	....	
30,000	.00550	.00315	....	....	
31,000	.00785	.00235	....	....	
32,000	.00825	.00040	....	....	
33,000	.00900	.00075	....	....	
72,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section........pounds..	72,500
Elastic limit per square inch of original section........do...	28,000
Elongation per inch after rupture........inch..	.1950
Elongation per inch under strain at elastic limit........do...	.00095
Reduction in diameter at point of rupture........do...	.055
Reduction in area after rupture, per cent of original section........	20.5
Position of rupture........	at middle of stem
Character of broken surface........	granular, silky spot at the circumference
Elongation of inch sections........	″.20*, ″.19*

No. 6972.

Marks, $\genfrac{}{}{0pt}{}{\text{A 117}}{\text{P S 15}}$

Diameter, ″.505.

Sectional area, .20 square inch.

Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
30,000	.00095	.00035	....	....	
32,000	.00105	.00010	....	....	Elastic limit.
33,000	.00765	.00660	....	....	
34,000	.00860	.00095	....	....	
35,000	.00905	.00045	....	....	
36,000	.00950	.00045	....	....	
37,000	.01060	.00110	....	....	
77,600	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	77,600
Elastic limit per square inch of original section	do	32,000
Elongation per inch after rupture	inch	.2350
Elongation per inch under strain at elastic limit	do	.00105
Reduction in diameter at point of rupture	do	.075
Reduction in area after rupture, per cent of original section		27.4
Position of rupture		1″.1 from neck
Character of broken surface		granular, silky spot at the circumference
Elongation of inch sections		″.24*, ″.23

No. 6969.

Marks, $\overset{\text{A 118}}{\text{P S 15}}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00035	.00020	....	....	
20,000	.00070	.00035	....	....	
29,000	.00095	.00025	....	....	Elastic limit.
30,000	.00155	.00060	....	....	
31,000	.00470	.00315	....	....	
32,000	.00550	.00080	....	....	
33,000	.00600	.00050	....	....	
34,000	.00665	.00065	....	....	
78,550	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	78,550
Elastic limit per square inch of original section	do...	29,000
Elongation per inch after rupture	inch..	.0950
Elongation per inch under strain at elastic limit	do...	.00095
Reduction in diameter at point of rupture	do...	.035
Reduction in area after rupture, per cent of original section		13.2
Position of rupture		".8 from neck
Character of broken surface		granular, silky spot near the circumference
Elongation of inch sections		".10*, ".09

No. 7187.

Marks, $\overset{\text{A 118}}{\text{2 P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00025	.00015	....	....	
20,000	.00060	.00035	....	....	
23,000	.00090	.00030	....	....	
24,000	.00100	.00010	....	....	Elastic limit
25,000	.00175	.00075	....	....	
26,000	.00220	.00045	....	....	
27,000	.00350	.00130	....	....	
28,000	.00415	.00065	....	....	
29,000	.00500	.00085	....	....	
30,000	.00590	.00090	....	....	
68,950	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	68,950
Elastic limit per square inch of original section ....do...	24,000
Elongation per inch after rupture ....inch..	.1350
Elongation per inch under strain at elastic limit ....do...	.00100
Reduction in diameter at point of rupture ....do...	.045
Reduction in area after rupture, per cent of original section	16.9
Position of rupture	″.70 from neck
Character of broken surface	granular, silky spot at circumference
Elongation of inch sections	″.15*, ″.12

No. 7012.

Marks, $\frac{\text{A 119}}{\text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2.″

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00040	.00025	....	....	
20,000	.00075	.00035	....	....	
30,000	.00125	.00050	....	....	Elastic limit.
31,000	.00560	.00435	....	....	
32,000	.00825	.00265	....	....	
33,000	.00900	.00075	....	....	
34,000	.00990	.00090	....	....	
35,000	.01095	.00105	....	....	
36,000	.01190	.00095	....	....	
37,000	.01300	.00110	....	....	
71,450	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section....................................pounds..	71,450
Elastic limit per square inch of original section....................................do...	30,000
Elongation per inch after rupture....................................inch..	.1500
Elongation per inch under strain at elastic limit....................................do...	.00125
Reduction in diameter at point of rupture....................................do...	.045
Reduction in area after rupture, per cent of original section....................................	16.9
Position of rupture....................................	″.80 from neck
Character of broken surface....................................	granular, dull spot at the circumference
Elongation of inch sections....................................	″.15*, ″.15

No. 7188.

Marks, $\overset{A\ 119}{2\ P\ S\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00030	.00015	....	....	
20,000	.00065	.00035	....	....	
25,000	.00090	.00025	....	....	
29,000	.00105	.00015	....	....	
30,000	.00110	.00005	....	....	Elastic limit.
31,000	.00810	.00700	....	....	
32,000	.00850	.00040	....	....	
33,000	.00915	.00065	....	....	
34,000	.01000	.00085	....	....	
35,000	.01125	.00125	....	....	
71,450	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	71,450
Elastic limit per square inch of original section ....do...	30,000
Elongation per inch after rupture ....inch..	.2150
Elongation per inch under strain at elastic limit ....do...	.00110
Reduction in diameter at point of rupture....do...	.065
Reduction in area after rupture, per cent of original section	23.9
Position of rupture	1″.15 from neck
Character of broken surface	granular 90 per cent, silky 10 per cent
Elongation of inch sections	″.21, ″.22

No. 7025.

Marks, $\overset{A\ 120}{P\ S\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00065	.00035	....	....	
30,000	.00105	.00040	....	....	Elastic limit.
31,000	.00925	.00820	....	....	
32,000	.00990	.00065	....	....	
33,000	.01100	.00110	....	....	
34,000	.01175	.00075	....	....	
35,000	.01300	.00125	....	....	
68,400	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	68,400
Elastic limit per square inch of original section	do...	30,000
Elongation per inch after rupture	inch..	.2000
Elongation per inch under strain at elastic limit	do...	.00105
Reduction in diameter at point of rupture	do. .	.055
Reduction in area after rupture, per cent of original section		20.5
Position of rupture		″.75 from neck
Character of broken surface		granular 80 per cent, silky 20 per cent
Elongation of inch sections		″.22*, ″.18

No. 7013.

Marks, $\overset{\text{A 121}}{\text{P S 15}}$.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00025	.00015	....	....	
20,000	.00060	.00035	....	....	
25,000	.00095	.00035	....	....	
26,000	.00105	.00010	....	....	Elastic limit.
27,000	.00165	.00060	....	....	
28,000	.00200	.00035	....	....	
29,000	.00260	.00060	....	....	
30,000	.00435	.00175	....	....	
31,000	.00540	.00105	....	....	
32,000	.00670	.00130	....	....	
33,000	.00810	.00140	....	....	
72,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	72,900
Elastic limit per square inch of original section ....do...	26,000
Elongation per inch after rupture ....inch..	.2000
Elongation per inch under strain at elastic limit ....do...	.00105
Reduction in diameter at point of rupture ....do...	.065
Reduction in area after rupture, per cent of original section	23.9
Position of rupture	″.60 from neck
Character of broken surface	granular, dull spot at the circumference
Elongation of inch sections	″.26*, ″.14

No. 7014.

Marks, $\substack{\text{A 122}\\ \text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00030	.00015	....	....	
20,000	.00070	.00040	....	....	
25,000	.00095	.00025	....	....	
27,000	.00105	.00010	....	....	
29,000	.00115	.00010	....	....	
30,000	.00125	.00010	....	....	Elastic limit.
31,000	.00650	.00525	....	....	
32,000	.00750	.00100	....	....	
33,000	.00800	.00050	....	....	
34,000	.00845	.00045	....	....	
35,000	.00925	.00080	....	....	
36,000	.01000	.00075	....	....	
74,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	74,000
Elastic limit per square inch of original section	do...	30,000
Elongation per inch after rupture	inch..	.2000
Elongation per inch under strain at elastic limit	do...	.00125
Reduction in diameter at point of rupture	do...	.065
Reduction in area after rupture, per cent of original section		23.9
Position of rupture		″.60 from neck
Character of broken surface		granular 80 per cent, dull silky 20 per cent
Elongation of inch section		″.22*, ″.18

No. 7015.

Marks, $\overset{\text{A 124}}{\text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00025	.00015	....	....	
20,000	.00060	.00035	....	....	
25,000	.00080	.00020	....	....	
27,000	.00095	.00015	....	....	
29,000	.00100	.00005	....	....	Elastic limit.
30,000	.00800	.00700	....	....	
31,000	.00925	.00125	....	....	
32,000	.01030	.00105	....	....	
33,000	.01160	.00130	....	....	
34,000	.01250	.00090	....	....	
35,000	.01375	.00125	....	....	
66,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	66,900
Elastic limit per square inch of original section	do...	29,000
Elongation per inch after rupture	inch..	.1950
Elongation per inch under strain at elastic limit	do...	.00100
Reduction in diameter at point of rupture	do...	.055
Reduction in area after rupture, per cent of original section		20.5
Position of rupture		″.75 from neck
Character of broken surface		granular 75 per cent, dull silky 25 per cent
Elongation of inch sections		″.18, ″.21*

No. 7016.

Marks, $\frac{\text{A 125}}{\text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00030	.00015	....	....	
20,000	.00065	.00035	....	....	
25,000	.00090	.00025	....	....	
27,000	.00105	.00015	....	....	
28,000	.00105	0.	....	....	
29,000	.00110	.00005	....	....	Elastic limit.
30,000	.01075	.00965	....	....	
31,000	.01080	.00005	....	....	
32,000	.01100	.00020	....	....	
33,000	.01200	.00100	....	....	
34,000	.01315	.00115	....	....	
35,000	.01475	.00160	....	....	
36,000	.01550	.00075	....	....	
62,350	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of orignal section ....pounds..	62,350
Elastic limit per square inch of original section ....do...	29,000
Elongation per inch after rupture ....inch..	.1000
Elongation per inch under strain at elastic limit ....do...	.00110
Reduction in diameter at point of rupture....do...	.085
Reduction in area after rupture, per cent of original section	13.2
Position of rupture	″.90 from neck
Character of broken surface	granular 90 per cent, dull silky 10 per cent
Elongation of inch sections	″.10*, ″.10

No. 7026.

Marks, $\overset{\text{A 126}}{\text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	
30,000	.00105	.00040	....	....	Elastic limit.
31,000	.01100	.00995	....	....	
32,000	.01200	.00100	....	....	
33,000	.01300	.00100	....	....	
34,000	.01465	.00165	....	....	
35,000	.01550	.00085	....	....	
65,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	65,100
Elastic limit per square inch of original section....do...	30,000
Elongation per inch after rupture....inch..	.1500
Elongation per inch under strain at elastic limit....do...	.00105
Reduction in diameter at point of rupture....do...	.035
Reduction in area after rupture, per cent of original section....	13.2
Position of rupture....	″.25 from neck
Character of broken surface....	granular 60 per cent, silky 40 per cent
Elongation of inch sections....	″.14, ″.16*

No. 7017.

Marks, $\overset{A\ 127}{P\ S\ 15}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00005	.00005	0.	....	
10,000	.00015	.00010	....	....	
20,000	.00050	.00035	....	....	
30,000	.00085	.00035	....	....	
31,000	.00095	.00010	....	....	
32,000	.00100	.00005	....	....	Elastic limit.
33,000	.00290	.00190	....	....	
34,000	.00630	.00340	....	....	
35,000	.00650	.00020	....	....	
36,000	.00705	.00055	....	....	
37,000	.00750	.00045	....	....	
38,000	.00855	.00105	....	....	
81,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	81,500
Elastic limit per square inch of original section	do...	32,000
Elongation per inch after rupture	inch..	.1450
Elongation per inch under strain at elastic limit	do...	.00100
Reduction in diameter at point of rupture	do...	.045
Reduction in area after rupture, per cent of original section		16.9
Position of rupture		at middle of stem
Character of broken surface		granular, dull spot at the circumference
Elongation of inch sections		".14, ".15*

No. 7136.

Marks, $\overset{\text{A 128}}{\text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00020	.00010	....	....	
20,000	.00060	.00040	....	....	
22,000	.00085	.00025	....	....	Elastic limit.
23,000	.00105	.00020	....	....	
24,000	.00180	.00075	....	....	
25,000	.00350	.00170	....	....	
26,000	.00600	.00250	....	....	
27,000	.00675	.00075	....	....	
28,000	.00775	.00100	....	....	
29,000	.00900	.00125	....	....	
30,000	.01025	.00125	....	....	
62,400	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section....pounds..	62,400
Elastic limit per square inch of original section....do...	22,000
Elongation per inch after rupture....inch..	.1650
Elongation per inch under strain at elastic limit....do...	.00085
Reduction in diameter at point of rupture....do...	.045
Reduction in area after rupture, per cent of original section....	16.9
Position of rupture....	″.70 from neck
Character of broken surface....	granular, silky spot at circumference
Elongation of inch sections....	″.16, ″.17*

No. 7189.

Marks, $\overset{A\ 128}{2\ P\ S\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1.000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00030	.00015	....	....	
20,000	.00065	.00035	....	....	
30,000	.00105	.00040	....	....	
31,000	.00110	.00005	....	....	
32,000	.00115	.00005	....	....	Elastic limit.
33,000	.00875	.00760	....	....	
34,000	.00925	.00050	....	....	
35,000	.00975	.00050	....	....	
36,000	.01060	.00085	....	....	
37,000	.01150	.00090	....	....	
71,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	71,500
Elastic limit per square inch of original section	do...	32,000
Elongation per inch after rupture	inch..	.1600
Elongation per inch under strain at elastic limit	do...	.00115
Reduction in diameter at point of rupture	do...	.045
Reduction in area after rupture, per cent of original section		16.9
Position of rupture		″.88 from neck
Character of broken surface		granular 80 per cent, silky 20 per cent
Elongation of inch sections		″.17*, ″.15

No. 7126.

Marks, $\overset{\text{A 129}}{\text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00035	.00020	....	....	
20,000	.00075	.00040	....	....	
25,000	.00100	.00025	....	....	
26,000	.00110	.00010	....	....	
27,000	.00120	.00010	....	....	Elastic limit.
28,000	.00145	.00025	....	....	
29,000	.00275	.00130	....	....	
30,000	.00400	.00125	....	....	
31,000	.00515	.00115	....	....	
32,000	.00625	.00110	....	....	
33,000	.00750	.00125	....	....	
34,000	.00810	.00060	....	....	
35,000	.00900	.00090	....	....	
70,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	70,500
Elastic limit per square inch of original section	do...	27,000
Elongation per inch after rupture	inch..	.1750
Elongation per inch under strain at elastic limit	do...	.00120
Reduction in diameter at point of rupture	do...	.055
Reduction in area after rupture, per cent of original section		20.5
Position of rupture		1″.15 from neck
Character of broken surface		granular 90 per cent, silky 10 per cent
Elongation of inch sections		″.16, ″.19*

No. 7127.

Marks, $\frac{\text{A 130}}{\text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00075	.00040	....	....	
25,000	.00100	.00025	....	....	
27,000	.00105	.00005	....	....	
28,000	.00110	.00005	....	....	
29,000	.00115	.00005	....	....	Elastic limit.
30,000	.00350	.00235	....	....	
31,000	.00750	.00400	....	....	
32,000	.00950	.00200	....	....	
33,000	.00975	.00025	....	....	
34,000	.01050	.00075	....	....	
35,000	.01150	.00100	....	....	
69,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	69,900
Elastic limit per square inch of original section	do...	29,000
Elongation per square inch after rupture	inch..	.1600
Elongation per inch under strain at elastic limit	do...	.00115
Reduction in diameter at point of rupture	do...	.045
Reduction in area after rupture, per cent of original section		16.9
Position of rupture		1″.02 from neck
Character of broken surface		granular 60 per cent, silky 40 per cent
Elongation of inch sections		″.15, ″.17*

No. 7128.

Marks, $^{A\ 131}_{P\ S\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00065	.00035	....	....	
30,000	.00105	.00040	....	....	
31,000	.00115	.00010	....	....	
32,000	.00125	.00010	....	....	Elastic limit.
33,000	.00235	.00110	....	....	
34,000	.00950	.00715	....	....	
35,000	.01005	.00055	....	....	
36,000	.01075	.00070	....	....	
37,000	.01175	.00100	....	....	
38,000	.01300	.00125	....	....	
71,450	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	71,450
Elastic limit per square inch of original section	do	32,000
Elongation per inch after rupture	inch	.1450
Elongation per inch under strain at elastic limit	do	.00125
Reduction in diameter at point of rupture	do	.045
Reduction in area after rupture, per cent of original section		16.9
Position of rupture		″.35 from neck
Character of broken surface		granular, silky spot at circumference
Elongation of inch sections		″.13, ″.16*

No. 7129.

Marks, $\overset{\text{A 132.}}{\text{P S 15.}}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00025	.00015	....	....	
20,000	.00060	.00035	....	....	
25,000	.00105	.00045	....	....	Elastic limit.
26,000	.00200	.00095	....	....	
27,000	.00235	.00035	....	....	
28,000	.00335	.00100	....	....	
29,000	.00410	.00075	....	....	
30,000	.00515	.00105	....	....	
31,000	.00625	.00110	....	....	
69,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	69,500
Elastic limit per square inch of original section ....do...	25,000
Elongation per inch after rupture ....inch..	.1600
Elongation per inch under strain at elastic limit ....do...	.00105
Reduction in diameter at point of rupture...do...	.045
Reduction in area after rupture, per cent of original section	16.9
Position of rupture...	".40 from neck
Character of broken surface	granular
Elongation of inch sections	".18, ".14*

No. 7137.

Marks, $^{\text{A 133}}_{\text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00025	.00015	....	....	
20,000	.00065	.00040	....	....	
21,000	.00070	.00005	....	....	Elastic limit.
22,000	.00090	.00020	....	....	
23,000	.00105	.00015	....	....	
24,000	.00160	.00055	....	....	
25,000	.00200	.00040	....	....	
26,000	.00275	.00075	....	....	
27,000	.00390	.00115	....	....	
28,000	.00465	.00075	....	....	
29,000	.00560	.00095	....	....	
30,000	.00660	.00100	....	....	
67,450	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section........pounds..	67,450
Elastic limit per square inch of original section........do...	21,000
Elongation per inch after rupture........inch..	.1100
Elongation per inch under strain at elastic limit........do...	.00070
Reduction in diameter at point of rupture........do...	.035
Reduction in area after rupture, per cent of original section........	13.2
Position of rupture........	″.90 from neck
Character of broken surface........	granular
Elongation of inch sections........	″.11, ″.11*

No. 7150.

Marks, $\substack{\text{A 134} \\ \text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00020	.00010	....	....	
20,000	.00060	.00040	....	....	
29,000	.00100	.00040	....	....	Elastic limit.
30,000	{ .00125	.00025	....	....	
	.00925	.00800	....	....	
31,000	.00980	.00055	....	....	
32,000	.01050	.00070	....	....	
33,000	.01150	.00100	....	....	
34,000	.01290	.00140	....	....	
65,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	65,100
Elastic limit per square inch of original section	do...	29,000
Elongation per inch after rupture	inch..	.1450
Elongation per inch under strain at elastic limit	do...	.00100
Reduction in diameter at point of rupture	do...	.085
Reduction in area after rupture, per cent of original section		13.2
Position of rupture		″.9 from neck
Character of broken surface		dull gray, amorphous, with trace of crystallization
Elongation of inch sections		″.16*, ″.13

No. 7138.

Marks, $\frac{\text{A 136}}{\text{P S 15}}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00030	.00015	....	....	
20,000	.00070	.00040	....	....	
30,000	.00115	.00045	....	....	
31,000	.00120	.00005	....	....	
32,000	.00130	.00010	....	....	Elastic limit.
	.00810	.00680	....	....	
33,000	.00865	.00055	....	....	
34,000	.00900	.00035	....	....	
35,000	.01050	.00150	....	....	
36,000	.01150	.00100	....	....	
37,000	.01255	.00105	....	....	
71,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	71,500
Elastic limit per square inch of original section	do...	32,000
Elongation per inch after rupture	inch..	.1800
Elongation per inch under strain at elastic limit	do...	.00130
Reduction in diameter at point of rupture	do..	.045
Reduction in area after rupture, per cent of original section		16.9
Position of rupture		1".00 from neck
Character of broken surface		granular, silky spot at circumference
Elongation of inch sections		".18*, ".18

No. 7167.

Marks, $\substack{\text{A 139}\\ \text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00025	.00015	....	....	
20,000	.00060	.00035	....	....	
30,000	.00100	.00040	....	....	
32,000	.00110	.00010	....	....	
33,000	.00120	.00010	....	....	Elastic limit.
34,000	.00725	.00605	....	....	
35,000	.00950	.00225	....	....	
36,000	.00980	.00030	....	....	
37,000	.01030	.00050	....	....	
38,000	.01140	.00110	....	....	
39,000	.01250	.00110	....	....	
73,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	73,000
Elastic limit per square inch of original section ....do...	33,000
Elongation per inch after rupture ....inch..	.1850
Elongation per inch under strain at elastic limit ....do...	.00120
Reduction in diameter at point of rupture ....do...	.055
Reduction in area after rupture, per cent of original section	20.5
Position of rupture	″.60 from neck
Character of broken surface	granular, silky spot at circumference
Elongation of inch sections	″.16, ′.21*

No. 7156.

Marks, $\overset{\text{A 140}}{\text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00025	.00015	....	....	
20,000	.00065	.00040	....	....	
21,000	.00075	.00010	....	....	Elastic limit.
22,000	.00095	.00020	....	....	
23,000	.00125	.00030	....	....	
24,000	.00185	.00060	....	....	
25,000	.00315	.00130	....	....	
26,000	.00400	.00085	....	....	
27,000	.00610	.00210	....	....	
28,000	.00640	.00030	....	....	
29,000	.00680	.00040	....	....	
30,000	.00900	.00220	....	....	
61,950	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	61,950
Elastic limit per square inch of original section	do	21,000
Elongation per inch after rupture	inch	.1000
Elongation per inch under strain at elastic limit	do	.00075
Reduction in diameter at point of rupture	do	.085
Reduction in area after rupture, per cent of original section		18.2
Position of rupture		″.25 from neck
Character of broken surface		granular, interspersed with silky metal
Elongation of inch sections		″.09, ″.11*

No. 7157.

Marks, $\overset{\text{A 141}}{\text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00065	.00035	....	....	
23,000	.00090	.00025	....	....	
24,000	.00095	.00005	....	....	
25,000	.00100	.00005	....	....	
26,000	.00110	.00010	....	....	Elastic limit.
27,000	.00200	.00090	....	....	
28,000	.00400	.00200	....	....	
29,000	.00675	.00275	....	....	
30,000	.00755	.00080	....	....	
31,000	.00850	.00095	....	....	
32,000	.00950	.00100	....	....	
64,850	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	64,850
Elastic limit per square inch of original section	do...	26,000
Elongation per inch after rupture	inch..	.0950
Elongation per inch under strain at elastic limit	do...	.00110
Reduction in diameter at point of rupture	do...	.025
Reduction in area after rupture, per cent of original section		9.5
Position of rupture		1″.05 from neck
Character of broken surface		granular, silky spot at circumference
Elongation of inch sections		″.09, ″.10*

No. 7151.

Marks, $\begin{smallmatrix}\text{A 142}\\ \text{P S 15}\end{smallmatrix}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.		
10,000	.00025	.00015			
20,000	.00055	.00030			
30,000	.00100	.00045			
31,000	.00110	.00010			Elastic limit.
32,000	.00625	.00515			
33,000	.00750	.00125			
34,000	.00850	.00100			
35,000	.00950	.00100			
36,000	.01050	.00100			
72,300					Tensile strength.

General summary.

Tensile strength per square inch of original section ……pounds..	72,300
Elastic limit per square inch of original section ……do...	31,000
Elongation per inch after rupture ……inch..	.2150
Elongation per inch under strain at elastic limit ……do...	.00110
Reduction in diameter at point of rupture ……do...	.055
Reduction in area after rupture, per cent of original section ……	20.5
Position of rupture ……	″.95 from neck
Character of broken surface ……	granular, silky spot at circumference
Elongation of inch sections ……	″.26*, ″.17

No. 7158.

Marks, $\overset{A\ 143}{P\ S\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
25,000	.00090	.00030	....	....	
26,000	.00095	.00005	....	....	
27,000	.00100	.00005	....	....	Elastic limit.
28,000	.00360	.00260	....	....	
29,000	.00660	.00300	....	....	
30,000	.00775	.00115	....	....	
31,000	.00900	.00125	....	....	
32,000	.00925	.00025	....	....	
33,000	.01025	.00100	....	....	
68,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	68,000
Elastic limit per square inch of original section	do...	27,000
Elongation per inch after rupture	inch..	.1900
Elongation per inch under strain at elastic limit	do...	.00100
Reduction in diameter at point of rupture	do...	.045
Reduction in area after rupture, per cent of original section		16.9
Position of rupture		″.95 from neck
Character of broken surface		granular, silky spot at circumference
Elongation of inch sections		″.19, ″.19*

No. 7139.

Marks, $\frac{\text{A 144}}{\text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00030	.00015	....	....	
18,000	.00070	.00040	....	....	
19,000	.00085	.00015	....	....	
20,000	.00095	.00010	....	....	Elastic limit.
21,000	.00150	.00055	....	....	
22,000	.00175	.00025	....	....	
23,000	.00290	.00115	....	....	
24,000	.00375	.00085	....	....	
25,000	.00475	.00100	....	....	
26,000	.00580	.00105	....	....	
60,400	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	60,400
Elastic limit per square inch of original section	do...	20,000
Elongation per inch after rupture	inch..	.1100
Elongation per inch under strain at elastic limit	do...	.00095
Reduction in diameter at point of rupture	do...	.035
Reduction in area after rupture, per cent of original section		13.2
Position of rupture		″.75 from neck
Character of broken surface		granular, silky spot at circumference
Elongation of inch sections		″.11, ″.11*

No. 7140.

Marks, $\overset{\text{A 145}}{\text{P S 15}}$

Diameter, ".505.

Sectional area, .20 square inch.

Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00035	.00020	....	....	
20,000	.00080	.00045	....	....	
21,000	.00095	.00015	....	....	Elastic limit.
22,000	.00135	.00040	....	....	
23,000	.00180	.00045	....	....	
24,000	.00305	.00125	....	....	
25,000	.00375	.00070	....	....	
26,000	.00490	.00115	....	....	
27,000	.00550	.00060	....	....	
64,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	64,000
Elastic limit per square inch of original section	do...	21,000
Elongation per inch after rupture	inch..	.1700
Elongation per inch under strain at elastic limit	do...	.00095
Reduction in diameter at point of rupture	do...	.055
Reduction in area after rupture, per cent of original section		20.5
Position of rupture		1".10 from neck
Character of broken surface		granular
Elongation of inch sections		".18, ".16*

No. 7141.

Marks, $\genfrac{}{}{0pt}{}{\text{A 146}}{\text{P S 15}}$

Diameter, ″.505.

Sectional area, .20 square inch.

Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00030	.00015	....	....	
20,000	.00065	.00035	....	....	
30,000	.00110	.00045	....	....	
31,000	.00115	.00005	....	....	Elastic limit.
32,000	.00975	.00860	....	....	
33,000	.01000	.00025	....	....	
34,000	.01050	.00050	....	....	
35,000	.01125	.00075	....	....	
36,000	.01250	.00125	....	....	
37,000	.01360	.00110	....	....	
69,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	69,500
Elastic limit per square inch of original section	do...	31,000
Elongation per inch after rupture	inch..	.1950
Elongation per inch under strain at elastic limit	do...	.00115
Reduction in diameter at point of rupture	do...	.055
Reduction in area after rupture, per cent of original section		20.5
Position of rupture		1″.20 from neck
Character of broken surface		granular, silky spot at circumference
Elongation of inch sections		″.19*, ″.20

No. 7142.

Marks, $\frac{\text{A 147}}{\text{P S 15}}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00025	.00015	....	....	
20,000	.00055	.00030	....	....	
25,000	.00070	.00015	....	....	
27,000	.00085	.00015	....	....	
28,000	.00095	.00010	....	....	Elastic limit.
29,000	.00575	.00480	....	....	
30,000	.00895	.00320	....	....	
31,000	.00920	.00025	....	....	
32,000	.01015	.00095	....	....	
33,000	.01125	.00110	....	....	
34,000	.01245	.00120	....	....	
66,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	66,900
Elastic limit per square inch of original section ....do...	28,000
Elongation per inch after rupture ....inch..	.1550
Elongation per inch under strain at elastic limit ....do...	.00095
Reduction in diameter at point of rupture....do...	.055
Reduction in area after rupture, per cent of original section....	20.5
Position of rupture....	".60 from neck
Character of broken surface....	granular, silky spot at circumference
Elongation of inch sections....	".15, ".16*

No. 7159.

Marks, $\overset{\text{A 148}}{\text{P S 15}}$

Diameter, ″.505.

Sectional area, .20 square inch.

Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00035	.00020	....	....	
20,000	.00070	.00035	....	....	
25,000	.00095	.00025	....	....	
27,000	.00105	.00010	....	....	
29,000	.00115	.00010	....	....	
30,000	.00125	.00010	....	....	Elastic limit.
31,000	.00160	.00035	....	....	
32,000	.00395	.00235	....	....	
33,000	.00835	.00440	....	....	
34,000	.00915	.00080	....	....	
35,000	.00990	.00075	....	....	
36,000	.01085	.00095	....	....	
70,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ......pounds..	70,900
Elastic limit per square inch of original section ......do...	30,000
Elongation per inch after rupture ......inch..	.1650
Elongation per inch under strain at elastic limit ......do...	.00125
Reduction in diameter at point of rupture ......do...	.045
Reduction in area after rupture, per cent of original section	16.9
Position of rupture	″.60 from neck
Character of broken surface	granular 60 per cent, silky 40 per cent
Elongation of inch sections	″.15, ″.18*

No. 7152.

Marks, $\frac{\text{A } 149}{\text{P S } 15}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00020	.00010	....	....	
20,000	.00055	.00035	....	....	
28,000	.00095	.00040	....	....	Elastic limit.
29,000	.00700	.00605	....	....	
30,000	.00800	.00100	....	....	
31,000	.00875	.00075	....	....	
32,000	.01000	.00125	....	....	
33,000	.01200	.00200	....	....	
68,350	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	68,350
Elastic limit per square inch of original section	do...	28,000
Elongation per inch after rupture	inch..	.1800
Elongation per inch under strain at elastic limit	do...	.00095
Reduction in diameter at point of rupture	do...	.045
Reduction in area after rupture, per cent of original section		16.9
Position of rupture		".9 from neck
Character of broken surface		granular, with irregular section of silky metal across surface
Elongation of inch sections		".16, ".20*

No. 7184.

Marks, $\frac{\text{A 150}}{\text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00035	.00020	....	....	
20,000	.00065	.00030	....	....	
24,000	....	....	....	....	Elastic limit, approximate.
25,000	.00125 .00200	.00060 .00075	....	....	
26,000	.00240	.00040	....	....	
27,000	.00310	.00070	....	....	
28,000	.00440	.00130	....	....	
29,000	.00510	.00070	....	....	
30,000	.00625	.00115	....	....	
64,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section........pounds..	64,900
Elastic limit per square inch of original section (approximate)........do...	24,000
Elongation per inch after rupture........inch..	.1100
Reduction in diameter at point of rupture........do...	.035
Reduction in area after rupture, per cent of original section........	13.2
Position of rupture........	″.55 from neck
Character of broken surface........	granular, silky spot at circumference
Elongation of inch sections........	″.10, ″.12*

No. 7185.

Marks, $\overset{\text{A 151}}{\text{P S 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00035	.00020	....	....	
20,000	.00070	.00035	....	....	
22,000	.00075	.00005	....	....	
23,000	.00085	.00010	....	....	Elastic limit.
24,000	.00105	.00020	....	....	
25,000	.00175	.00070	....	....	
26,000	.00250	.00075	....	....	
27,000	.00475	.00225	....	....	
28,000	.00575	.00100	....	....	
29,000	.00675	.00100	....	....	
30,000	.00775	.00100	....	....	
53,950	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	53,950
Elastic limit per square inch of original section ....do...	23,000
Elongation per inch after rupture ....inch..	.0350
Elongation per inch under strain at elastic limit ....do...	.00085
Reduction in diameter at point of rupture ....do...	.015
Reduction in area after rupture, per cent of original section	5.7
Position of rupture	″.50 from neck
Character of broken surface	granular silvery lustre 60 per cent, silky flaky 40 per cent
Elongation of inch sections	″.03, ″.04*

PIVOT YOKES—15-POUNDER MOUNTS.

STEEL CASTINGS.

No. 6613.

Marks, $\overset{S\,1}{\text{P Y 15}}$

Diameter, ".505.

Sectional area, .20 square inch.

Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
27,000	.00090	.00030	....	....	
28,000	.00100	.00010	....	....	Elastic limit.
29,000	.00575	.00475	....	....	
30,000	.00900	.00325	....	....	
31,000	.01150	.00250	....	....	
32,000	.01250	.00100	....	....	
33,000	.01450	.00200	....	....	
59,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	59,100
Elastic limit per square inch of original section	do...	28,000
Elongation per inch after rupture	inch..	.1300
Elongation per inch under strain at elastic limit	do...	.00100
Reduction in diameter at point of rupture	do...	.055
Reduction in area after rupture, per cent of original section		20.5
Position of rupture		at middle of stem
Character of broken surface		dull gray, amorphous
Elongation of inch sections		".12, ".14*

No. 6765.

Marks, $\overset{\text{S 4}}{\text{P Y 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
25,000	.00090	.00030	....	....	Elastic limit.
26,000	.00120	.00030	....	....	
27,000	.00145	.00025	....	....	
28,000	.00170	.00025	....	....	
29,000	.00210	.00040	....	....	
30,000	.00260	.00050	....	....	
31,000	.00350	.00090	....	....	
32,000	.00430	.00080	....	....	
75.100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	75,100
Elastic limit per square inch of original section	do...	25,000
Elongation per inch after rupture	inch..	.1950
Elongation per inch under strain at elastic limit	do...	.00090
Reduction in diameter at point of rupture	do...	.075
Reduction in area after rupture, per cent of original section		27.4
Position of rupture		″.75 from neck
Character of broken surface		granular 60 per cent, silky 40 per cent
Elongation of inch sections		″.24*, ″.15

No. 6779.

Marks, $\overset{S\ 5}{\text{P Y 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.		
10,000	.00030	.00020			
20,000	.00060	.00030			
30,000	.00100	.00040			
32,000	.00110	.00010			
33,000	.00120	.00010			Elastic limit.
34,000	.00225	.00105			
36,000	.00750	.00525			
37,000	.00980	.00230			
38,000	.01025	.00045			
39,000	.01100	.00075			
77,100					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	77,100
Elastic limit per square inch of original section	do...	33,000
Elongation per inch after rupture	inch..	.1950
Elongation per inch under strain at elastic limit	do...	.00120
Reduction in diameter at point of rupture	do...	.065
Reduction in area after rupture, per cent of original section		23.9
Position of rupture		″.70 from neck
Character of broken surface		granular, silky spot at the circumference
Elongation of inch sections		″.18, ″.21*

No. 6796.

Marks, $\overset{\text{S 6}}{\text{P Y 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00005	.00005	0.	....	
10,000	.00025	.00020	....	....	
20,000	.00055	.00030	....	....	
30,000	.00100 .00740	.00045 .00640	....	....	Elastic limit.
31,000	.00795	.00055	....	....	
32,000	.00845	.00050	....	....	
33,000	.00945	.00100	....	....	
34,000	.01050	.00105	....	....	
35,000	.01125	.00075	....	....	
72,800	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	72,800
Elastic limit per square inch of original section	do...	30,000
Elongation per inch after rupture	inch..	.2350
Elongation per inch under strain at elastic limit	do...	.00100
Reduction in diameter at point of rupture	do...	.075
Reduction in area after rupture, per cent of original section		27.4
Position of rupture		1″.2 from neck
Character of broken surface		granular 80 per cent, silky 20 per cent
Elongation of inch sections		″.21, ″.26*

No. 6815.

Marks, $\overset{\mathrm{S}\,7}{\mathrm{P\,Y}}$ 15

Diameter, ".505.

Sectional area, .20 square inch.

Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00025	.00015	....	....	
15,000	.00045	.00020	....	....	
17,000	.00055	.00010	....	....	
18,000	.00060	.00005	....	....	
19,000	.00065	.00005	....	....	
20,000	.00070	.00005	....	....	Elastic limit.
21,000	.00090	.00020	....	....	
22,000	.00120	.00030	....	....	
23,000	.00165	.00045	....	....	
24,000	.00250	.00085	....	....	
25,000	.00400	.00150	....	....	
26,000	.00490	.00090	....	....	
27,000	.00555	.00065	....	....	
28,000	.00675	.00120	....	....	
29,000	.00760	.00085	....	....	
65,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	65,000
Elastic limit per square inch of original section ....do...	20,000
Elongation per inch after rupture ....inch..	.1650
Elongation per inch under strain at elastic limit ....do...	.00070
Reduction in diameter at point of rupture....................do...	.045
Reduction in area after rupture, per cent of original section....................	16.9
Position of rupture	".85 from neck
Character of broken surface....................	granular
Elongation of inch sections	".17*, ".16

No. 6848.

Marks, $\overset{8\ 7}{2\,\mathrm{P\,Y}\,15}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00005	.00005	0.	....	
10,000	.00020	.00015	....	....	
20,000	.00060	.00040	....	....	
26,000	.00080	.00020	....	....	
27,000	.00085	.00005	....	....	Elastic limit.
28,000	.00170	.00085	....	....	
29,000	.00500	.00330	....	....	
30,000	.00725	.00225	....	....	
31,000	.00825	.00100	....	....	
32,000	.00900	.00075	....	....	
70,550	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	70,550
Elastic limit per square inch of original section	do...	27,000
Elongation per inch after rupture	inch..	.2250
Elongation per inch under strain at elastic limit	do...	.00085
Reduction in diameter at point of rupture	do...	.085
Reduction in area after rupture, per cent of original section		30.7
Position of rupture		1".2 from neck
Character of broken surface		granular 60 per cent, silky 40 per cent
Elongation of inch sections		".25*, ".20

No. 6816.

Marks, $\overset{S\,8}{P\,Y\,15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00020	.00010	....	....	
20,000	.00060	.00040	....	....	
30,000	.00105	.00045	....	....	
31,000	.00105	0.	....	....	
32,000	.00110	.00005	....	....	
33,000	.00120	.00010	....	....	Elastic limit.
34,000	.01050	.00930	....	....	
35,000	.01110	.00060	....	....	
36,000	.01200	.00090	....	....	
37,000	.01295	.00095	....	....	
38,000	.01415	.00120	....	....	
39,000	.01550	.00135	....	....	
40,000	.01650	.00100	....	....	
72,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	72,000
Elastic limit per square inch of original section	do...	33,000
Elongation per inch after rupture	inch..	.2650
Elongation per inch under strain at elastic limit	do...	.00120
Reduction in diameter at point of rupture	do...	.095
Reduction in area after rupture, per cent of original section		84.0
Position of rupture		1″.20 from neck
Character of broken surface		fine granular, silky spot at the circumference
Elongation of inch sections		″.28, ″.25*

No. 6817.

Marks, $\overset{8\ 9}{\text{P Y 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00020	.00020	0.	....	
10,000	.00040	.00020	....	....	
20,000	.00070	.00030	....	....	
25,000	.00095	.00025	....	....	
26,000	.00100	.00005	....	....	
27,000	.00105	.00005	....	....	
28,000	.00115	.00010	....	....	Elastic limit.
29,000	.00750	.00635	....	....	
30,000	.00810	.00060	....	....	
31,000	.00850	.00040	....	....	
32,000	.00950	.00100	....	....	
33,000	.01050	.00100	....	....	
34,000	.01175	.00125	....	....	
35,000	.01265	.00090	....	....	
69,600	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	69,600
Elastic limit per square inch of original section	do...	28,000
Elongation per inch after rupture	inch..	.2300
Elongation per inch under strain at elastic limit	do...	.00115
Reduction in diameter at point of rupture	do...	.065
Reduction in area after rupture, per cent of original section		23.9
Position of rupture		1″.16 from neck
Character of broken surface		fine granular, silky spot at the circumference
Elongation of inch sections		″.23, ″.23*

No. 6818.

Marks, $\overset{S\ 10}{P\ Y\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00035	.00020	....	....	
20,000	.00070	.00035	....	....	
25,000	.00090	.00020	....	....	
26,000	.00095	.00005	....	....	
27,000	.00100	.00005	....	....	Elastic limit.
28,000	.00130	.00030	....	....	
29,000	.00660	.00530	....	....	
30,000	.00750	.00090	....	....	
31,000	.00790	.00040	....	....	
32,000	.00895	.00105	....	....	
33,000	.01000	.00105	....	....	
34,000	.01075	.00075	....	....	
35,000	.01175	.00100	....	....	
71,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	71,000
Elastic limit per square inch of original section ....do...	27,000
Elongation per inch after rupture ....inch..	.2150
Elongation per inch under strain at elastic limit ....do...	.00100
Reduction in diameter at point of rupture..do...	.075
Reduction in area after rupture, per cent of original section	27.4
Position of rupture	″.95 from neck
Character of broken surface	granular, silky spot at the circumference
Elongation of inch sections	″.19, ″.24*

No. 6833.

Marks, $\overset{S\ 11}{\text{P Y}}\ 15$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00040	.00025	....	....	
20,000	.00075	.00035	....	....	
25,000	.00100	.00025	....	....	
26,000	.00100	0.	....	....	
27,000	.00105	.00005	....	....	
28,000	.00115	.00010	....	....	Elastic limit.
29,000	.00575	.00460	....	....	
30,000	.00640	.00065	....	....	
31,000	.00760	.00120	....	....	
32,000	.00815	.00055	....	....	
33,000	.00910	.00095	....	....	
34,000	.01000	.00090	....	....	
35,000	.01085	.00085	....	....	
36,000	.01175	.00090	....	....	
72,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	72,500
Elastic limit per square inch of original section ....do...	28,000
Elongation per inch after rupture ....inch..	.2000
Elongation per inch under strain at elastic limit ....do...	.00115
Reduction in diameter at point of rupture ....do...	.065
Reduction in area after rupture, per cent of original section	23.9
Position of rupture	″.80 from neck
Character of broken surface	granular, silky spot at circumference
Elongation of inch sections	″.22*, ″.18

No. 6834.

Marks, $\overset{S\ 12}{P\ Y\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00065	.00035	....	....	
25,000	.00090	.00025	....	....	
27,000	.00100	.00010	....	....	
28,000	.00100	0.	....	....	
29,000	.00105	.00005	....	....	Elastic limit.
30,000	.00710	.00605	....	....	
31,000	.00910	.00200	....	....	
32,000	.00925	.00015	....	....	
33,000	.00950	.00025	....	....	
34,000	.01050	.00100	....	....	
35,000	.01125	.00075	....	....	
36,000	.01250	.00125	....	....	
37,000	.01350	.00100	....	....	
71,550	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	71,550
Elastic limit per square inch of original section	do...	29,000
Elongation per inch after rupture	inch..	.1800
Elongation per inch under strain at elastic limit	do...	.00105
Reduction in diameter at point of rupture	do...	.075
Reduction in area after rupture, per cent of original section		27.4
Position of rupture		1″.22 from neck
Character of broken surface		granular, silky spot at circumference
Elongation of inch sections		″.23*, ″.13

No. 6868.

Marks, $\overset{\text{S 15}}{\text{P Y 15}}$

Diameter, ″.505.

Sectional area, .20 square inch.

Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00060	.00025	....	....	
30,000	.00100	.00040	....	....	
33,000	.00110	.00010	....	....	Elastic limit.
	.01000	.00890	....	....	
34,000	.01050	.00050	....	....	
35,000	.01175	.00125	....	....	
36,000	.01250	.00075	....	....	
37,000	.01330	.00080	....	....	
38,000	.01450	.00120	....	....	
71,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	71,500
Elastic limit per square inch of original section	do...	33,000
Elongation per inch after rupture	inch..	.1800
Elongation per inch under strain at elastic limit	do...	.00110
Reduction in diameter at point of rupture	do...	.055
Reduction in area after rupture, per cent of original section		20.5
Position of rupture		1″ from neck
Character of broken surface		fine granular, silky spot at the circumference
Elongation of inch sections		″.19*, ″.17

No. 6887.

Marks, $\overset{\text{S 16}}{\text{P Y 15}}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00060	.00025	....	....	
30,000	.00095	.00035	....	....	
32,000	.00100	.00005	....	....	Elastic limit.
33,000	.00940	.00840	....	....	
34,000	.01000	.00060	....	....	
35,000	.01050	.00050	....	....	
36,000	.01150	.00100	....	....	
37,000	.01250	.00100	....	....	
71,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section .... pounds..	71,000
Elastic limit per square inch of original section .... do...	32,000
Elongation per inch after rupture .... inch..	.1950
Elongation per inch under strain at elastic limit .... do...	.00100
Reduction in diameter at point of rupture .... do...	.065
Reduction in area after rupture, per cent of original section	20.5
Position of rupture	1" from neck
Character of broken surface	granular 60 per cent, silky 40 per cent
Elongation of inch sections	".18, ".21*

No. 6888.

Marks, $\overset{S\ 17}{\mathrm{P\ Y\ 15}}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00080	.00045	....	....	Elastic limit.
21,000	.00120	.00040	....	....	
22,000	.00190	.00070	....	....	
23,000	.00300	.00110	....	....	
24,000	.00410	.00110	....	....	
25,000	.00550	.00140	....	....	
62,400	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	62,400
Elastic limit per square inch of original section	do...	20,000
Elongation per inch after rupture	inch..	.1650
Elongation per inch under strain of elastic limit	do...	.00080
Reduction in diameter at point of rupture	do...	.045
Reduction in area after rupture, per cent of original section		16.9
Position of rupture		1." from neck
Character of broken surface		granular
Elongation of inch sections		".16, ".17*

No. 6907.

Marks, $\overset{S\,17}{2\,P\,Y\,15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015			
10,000	.00035	.00020			
20,000	.00070	.00035			
30,000	.00110	.00040			
31,000	.00115	.00005			
32,000	.00115	0.			Elastic limit.
33,000	.00985	.00870			
34,000	.01010	.00025			
35,000	.01080	.00070			
36,000	.01160	.00080			
37,000	.01255	.00095			
38,000	.01375	.00120			
39,000	.01450	.00075			
40,000	.01600	.00150			
69,450					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	69,450
Elastic limit per square inch of original section	do...	32,000
Elongation per inch after rupture	inch..	.1000
Elongation per inch under strain at elastic limit	do...	.00115
Reduction in diameter at point of rupture	do...	.025
Reduction in area after rupture, per cent of original section		9.5
Position of rupture		at the neck
Character of broken surface		granular, silky spot at circumference
Elongation of inch sections		″.10, ″.10*

No. 6920.

Marks, $\overset{S\ 17}{3\ P}\ Y\ 15$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	
30,000	.00100	.00035	....	....	
31,000	.00110	.00010	....	....	Elastic limit.
32,000	.00135	.00025	....	....	
33,000	.00950	.00815	....	....	
34,000	.00985	.00035	....	....	
35,000	.01050	.00065	....	....	
36,000	.01150	.00100	....	....	
74,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	74,000
Elastic limit per square inch of original section	do...	31,000
Elongation per inch after rupture	inch..	.2500
Elongation per inch under strain at elastic limit	do...	.00110
Reduction in diameter at point of rupture	do...	.095
Reduction in area after rupture, per cent of original section		34.0
Position of rupture		1″.2 from neck
Character of broken surface		granular 60 per cent, silky 40 per cent
Elongation of inch sections		″.28*, ″.22

No. 6890.

Marks, $\overset{S\ 18}{P\ Y\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	....	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
25,000	.00085	.00025	....	....	
26,000	.00095	.00010	....	....	Elastic limit.
27,000	.00550	.00455	....	....	
28,000	.00635	.00085	....	....	
29,000	.00750	.00115	....	....	
30,000	.00825	.00075	....	....	
31,000	.00915	.00090	....	....	
66,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	66,000
Elastic limit per square inch of original section	do...	26,000
Elongation per inch after rupture	inch..	.1100
Elongation per inch under strain at elastic limit	do...	.00095
Reduction in diameter at point of rupture	do...	.035
Reduction in area after rupture, per cent of original section		13.2
Position of rupture		″.65 from neck
Character of broken surface		granular
Elongation of inch sections		″.10, ″12*

No. 6904.

Marks, $\overset{S\ 18}{2\ P\ Y\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00060	.00025	....	....	
30,000	.00095	.00035	....	....	
34,000	.00115	.00020	....	....	Elastic limit.
35,000	.00950	.00835	....	....	
36,000	.01025	.00075	....	....	
37,000	.01100	.00075	....	....	
38,000	.01200	.00100	....	....	
39,000	.01290	.00090	....	....	
76,800	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	76,800
Elastic limit per square inch of original section	do...	34,000
Elongation per inch after rupture	inch..	.2450
Elongation per inch under strain at elastic limit	do...	.00115
Reduction in diameter at point of rupture	do...	.085
Reduction in area after rupture, per cent of original section		30.7
Position of rupture		1″.17 from neck
Character of broken surface		silky, trace of granulation
Elongation of inch sections		″.23*, ″.26*

No. 6889.

Marks, $\overset{S\ 19}{P\ Y\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	
30,000	.00105	.00040	....	....	
34,000	.00115	.00010	....	....	Elastic limit.
35,000	.00135	.00020	....	....	
36,000	.01000	.00865	....	....	
37,000	.01085	.00085	....	....	
38,000	.01160	.00075	....	....	
39,000	.01275	.00115	....	....	
77,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	77,000
Elastic limit per square inch of original section ....do...	34,000
Elongation per inch after rupture ....inch..	.2250
Elongation per inch under strain at elastic limit ....do...	.00115
Reduction in diameter at point of rupture ....do...	.065
Reduction in area after rupture, per cent of original section	23.9
Position of rupture	1″.14 from neck
Character of broken surface	granular 70 per cent, silky 30 per cent
Elongation of inch sections	″.20, ″.25*

No. 6891.

Marks, $\overset{\mathrm{S\ 20}}{\mathrm{P\ Y\ 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00060	.00025	....	....	
30,000	.00100	.00040	....	....	
32,000	.00110	.00010	....	....	Elastic limit.
33,000	.00700	.00590	....	....	
34,000	.00800	.00100	....	....	
35,000	.00845	.00045	....	....	
36,000	.00900	.00055	....	....	
37,000	.00975	.00075	....	....	
79,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	79,100
Elastic limit per square inch of original section ....do...	32,000
Elongation per inch after rupture ....inch..	.2000
Elongation per inch under strain at elastic limit ....do...	.00110
Reduction in diameter at point of rupture....do...	.065
Reduction in area after rupture, per cent of original section....	23.9
Position of rupture	″.5 from neck
Character of broken surface	granular, silky spot at circumference
Elongation of inch sections	″.17, ″.23*

No. 6892.

Marks, $\overset{S\ 21}{\text{P Y 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
30,000	.00090	.00030	....	....	
31,000	.00100	.00010	....	....	Elastic limit.
32,000	.00800	.00700	....	....	
33,000	.00900	.00100	....	....	
34,000	.00940	.00040	....	....	
35,000	.01000	.00060	....	....	
36,000	.01150	.00150	....	....	
73,050	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	73,050
Elastic limit per square inch of original section ....do...	31,000
Elongation per inch after rupture ....inch..	.2550
Elongation per inch under strain at elastic limit ....do...	.00100
Reduction in diameter at point of rupture........................do...	.095
Reduction in area after rupture, per cent of original section	34.0
Position of rupture	1″ from neck
Character of broken surface........................	silky 70 per cent, granular 30 per cent
Elongation of inch sections........................	″.30*, ″.21

No. 6893.

Marks, $\overset{\text{S 22}}{\text{P Y 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.		
10,000	.00025	.00015			
20,000	.00060	.00035			
30,000	.00095	.00035			
33,000	.00105	.00010			
34,000	.00110	.00005			Elastic limit.
35,000	.00950	.00840			
36,000	.01025	.00075			
37,000	.01125	.00100			
38,000	.01180	.00055			
39,000	.01290	.00110			
75,400					Tensile strength.

General summary.

Tensile strength per square inch of original section	**pounds..**	**75,400**
Elastic limit per square inch of original section	**do...**	**34,000**
Elongation per inch after rupture	**inch..**	**.2400**
Elongation per inch under strain at elastic limit	**do...**	**.00110**
Reduction in diameter at point of rupture	**do...**	**.095**
Reduction in area after rupture, per cent of original section		**34.0**
Position of rupture		**at middle of stem**
Character of broken surface		**silky 70 per cent, granular 30 per cent**
Elongation of inch sections		**″.21*, ″.27***

No. 6894.

Marks, $\overset{S\ 23}{\mathrm{P\ Y\ 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00060	.00025	....	....	
30,000	.00100	.00040	....	....	
31,000	.00105	.00005	....	....	Elastic limit.
32,000	.00450	.00345	....	....	
33,000	.00750	.00300	....	....	
34,000	.00860	.00110	....	....	
35,000	.00930	.00070	....	....	
36,000	.01020	.00090	....	....	
73,600	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	73,600
Elastic limit per square inch of original section	do...	31,000
Elongation per inch after rupture	inch..	.2500
Elongation per inch under strain at elastic limit	do...	.00105
Reduction in diameter at point of rupture	do...	.085
Reduction in area after rupture, per cent of original section		30.7
Position of rupture		″.9 from neck
Character of broken surface		silky 60 per cent, granular 40 per cent
Elongation of inch sections		″.20, ″.30

No. 6905.

Marks, $\substack{S\ 24\\ P\ Y\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00060	.00025	....	....	
30,000	.00100	.00040	....	....	
33,000	.00115	.00015	....	....	Elastic limit.
34,000	.01025	.00910	....	....	
35,000	.01115	.00090	....	....	
36,000	.01200	.00085	....	....	
37,000	.01300	.00100	....	....	
38,000	.01450	.00150	....	....	
72,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	72,500
Elastic limit per square inch of original section	do	33,000
Elongation per inch after rupture	inch	.2650
Elongation per inch under strain at elastic limit	do	.00115
Reduction in diameter at point of rupture	do	.095
Reduction in area after rupture, per cent of original section		34.0
Position of rupture		at middle of stem
Character of broken surface		granular 55 per cent, silky 45 per cent
Elongation of inch sections		″.28*, ″.25*

No. 6906.

Marks, $\overset{S\ 25}{P\ Y\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
30,000	.00150	.00090	....	....	
32,000	.00160	.00010	....	....	Elastic limit.
33,000	{ .00175 .00700	.00015 .00525	....	....	
34,000	.00790	.00090	....	....	
35,000	.00875	.00085	....	....	
36,000	.00930	.00055	....	....	
37,000	.01000	.00070	....	....	
78,550	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	78,550
Elastic limit per square inch of original section ....do...	32,000
Elongation per inch after rupture ....inch..	.2150
Elongation per inch under strain at elastic limit....................do...	.00160
Reduction in diameter at point of rupture....................do...	.075
Reduction in area after rupture, per cent of original section	27.4
Position of rupture....................	″.75 from neck
Character of broken surface	granular
Elongation of inch sections	″.19, ″.24*

No. 6914.

Marks, $\overset{S\ 26}{P\ Y\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00035	.00020	....	....	
20,000	.00065	.00030	....	....	
30,000	.00105	.00040	....	....	Elastic limit.
31,000	.00135	.00030	....	....	
32,000	.00700	.00565	....	....	
33,000	.00800	.00100	....	....	
34,000	.00850	.00050	....	....	
35,000	.00915	.00065	....	....	
77,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	77,000
Elastic limit per square inch of original section	do...	30,000
Elongation per inch after rupture	inch..	.2250
Elongation per inch under strain at elastic limit	do...	.00105
Reduction in diameter at point of rupture	do...	.085
Reduction in area after rupture, per cent of original section		30.7
Position of rupture		.1″ from neck
Character of broken surface		granular, silky spot at the circumference
Elongation of inch sections		″.24*, ″.21

No. 6919.

Marks, $\overset{S\ 27}{\mathrm{P\ Y\ 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.		
10,000	.00065	.00055			
30,000	.00100	.00035			
31,000	.00105	.00005			Elastic limit.
32,000	.00835	.00730			
33,000	.00865	.00030			
34,000	.00895	.00030			
35,000	.00950	.00055			
36,000	.01050	.00100			
75,600					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	75,600
Elastic limit per square inch of original section	do...	31,000
Elongation per inch after rupture	inch..	.2000
Elongation per inch under strain at elastic limit	do...	.00105
Reduction in diameter at point of rupture	do...	.065
Reduction in area after rupture, per cent of original section		23.9
Position of rupture		1″.07 from neck
Character of broken surface		granular, silky spot at the circumference
Elongation of inch sections		″.21*, ″.19

No. 6915.

Marks, $\overset{\text{S 28}}{\text{P Y 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00025	.00015	....	....	
20,000	.00055	.00030	....	....	
30,000	.00100	.00045	....	....	Elastic limit.
31,000	.00550	.00450	....	....	
32,000	.00675	.00125	....	....	
33,000	.00715	.00040	....	....	
34,000	.00800	.00085	....	....	
35,000	.00900	.00100	....	....	
77,600	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	77,600
Elastic limit per square inch of orginal section	do	30,000
Elongation per inch after rupture	inch	.2100
Elongation per inch under strain at elastic limit	do	.00100
Reduction in diameter at point of rupture	do	.065
Reduction in area after rupture, per cent of original section		23.9
Position of rupture		at middle of stem
Character of broken surface		granular, silky spot at the circumference
Elongation of inch sections		″.20*, ″.22*

No. 6921.

Marks, $\overset{S\ 29}{P\ Y\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
30,000	.00095	.00035	....	....	Elastic limit.
31,000	.00735	.00640	....	....	
32,000	.00800	.00065	....	....	
33,000	.00900	.00100	....	....	
34,000	.01010	.00110	....	....	
35,000	.01100	.00090	....	....	
73,600	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	73,600
Elastic limit per square inch of original section	do...	30,000
Elongation per inch after rupture	inch..	.2100
Elongation per inch under strain at elastic limit	do...	.00095
Reduction in diameter at point of rupture	do...	.075
Reduction in area after rupture, per cent of original section		27.4
Position of rupture		1″.03 from neck
Character of broken surface		granular 60 per cent, dull silky 40 per cent
Elongation of inch sections		″.19, ″.23*

No. 6925.

Marks, $\overset{S\ 30}{P\ Y}$ 15
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00065	.00035	....	....	
30,000	.00100	.00035	....	....	
31,000	.00105	.00005	....	....	
32,000	.00115	.00010	....	....	Elastic limit.
33,000	.00740	.00625	....	....	
34,000	.00840	.00100	....	....	
35,000	.00890	.00050	....	....	
36,000	.00965	.00075	....	....	
37,000	.01050	.00085	....	....	
76,550	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	76,550
Elastic limit per square inch of original section	do	32,000
Elongation per inch after rupture	inch	.2050
Elongation per inch under strain at elastic limit	do	.00115
Reduction in diameter at point of rupture	do	.065
Reduction in area after rupture, per cent of original section		23.9
Position of rupture		1″.1 from neck
Character of broken surface		granular, with silky spots
Elongation of inch sections		″.19, ″.22*

No. 6927.

Marks, $\overset{\text{S 31}}{\text{P Y 15}}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	
30,000	.00110	.00045	....	....	
36,000	.00130	.00020	....	....	
37,000	.00140	.00010	....	....	Elastic limit.
38,000	.00190	.00050	....	....	
39,000	.00750	.00560	....	....	
40,000	.00810	.00060	....	....	
41,000	.00880	.00070	....	....	
42,000	.00940	.00060	....	....	
43,000	.01000	.00060	....	....	
87,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	87,100
Elastic limit per square inch of original section	do...	37,000
Elongation per inch after rupture	inch..	.1950
Elongation per inch under strain at elastic limit	do...	.00140
Reduction in diameter at point of rupture	do...	.065
Reduction in area after rupture, per cent of original section		23.9
Position of rupture		1".1 from neck
Character of broken surface		fine granular
Elongation of inch sections		".22*, ".17

No. 6928.

Marks, $\overset{\text{S 32}}{\text{P Y 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00065	.00035	....	....	
29,000	.00100	.00035	....	....	Elastic limit.
30,000	.00690	.00590	....	....	
31,000	.00815	.00125	....	....	
32,000	.00900	.00085	....	....	
33,000	.00970	.00070	....	....	
34,000	.01060	.00090	....	....	
70,300	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	70,300
Elastic limit per square inch of original section	do	29,000
Elongation per inch after rupture	inch	.1750
Elongation per inch under strain at elastic limit	do	.00100
Reduction in diameter at point of rupture	do	.055
Reduction in area after rupture, per cent of original section		20.5
Position of rupture		1″.1 from neck
Character of broken surface		granular, silvery luster
Elongation of inch sections		″.19*, ″.16

No. 6929.

Marks, $\overset{S\ 33}{P\ Y\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	
30,000	.00105	.00040	....	....	Elastic limit.
31,000	.00475	.0370	....	....	
32,000	.00550	.0075	....	....	
33,000	.00635	.0085	....	....	
34,000	.00740	.0105	....	....	
35,000	.00800	.0060	....	....	
79,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	79,500
Elastic limit per square inch of original section	do...	30,000
Elongation per inch after rupture	inch..	.1750
Elongation per inch under strain at elastic limit	do...	.00105
Reduction in diameter at point of rupture	do...	.055
Reduction in area after rupture, per cent of original section		20.5
Position of rupture		at middle of stem
Character of broken surface		granular, silky spot at the circumference
Elongation of inch sections		″.19*, ″.16*

No. 6930.

Marks, $\overset{S\ 34}{P\ Y}\ 15$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00025	.00015	....	....	
20,000	.00060	.00035	....	....	
30,000	.00100	.00040	....	....	Elastic limit.
31,000	.00600	.00500	....	....	
32,000	.00685	.00085	....	....	
33,000	.00750	.00065	....	....	
34,000	.00800	.00050	....	....	
35,000	.00800	.00100	....	....	
76,450	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section........pounds..	76,450
Elastic limit per square inch of original section........do...	30,000
Elongation per inch after rupture........inch..	.1900
Elongation per inch under strain at elastic limit........do...	.00100
Reduction in diameter at point of rupture........do...	.065
Reduction in area after rupture, per cent of original section........	23.9
Position of rupture........	″.95 from neck
Character of broken surface........	granular, silky spot at the circumference
Elongation of inch sections........	″.17, ″.21*

No. 6931.

Marks, $\overset{S\ 35}{P\ Y\ 15}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	
27,000	.00095	.00030	....	....	Elastic limit.
28,000	.00300	.00205	....	....	
29,000	.00800	.00500	....	....	
30,000	.00900	.00100	....	....	
31,000	.00965	.00065	....	....	
32,000	.01100	.00135	....	....	
64,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	64,000
Elastic limit per square inch of original section ....do...	27,000
Elongation per inch after rupture ....inch..	.1050
Elongation per inch under strain at elastic limit ....do...	.00095
Reduction in diameter at point of rupture....do...	.035
Reduction in area after rupture, per cent of original section....	18.2
Position of rupture	".4 from neck
Character of broken surface....	granular 80 per cent, silky 20 per cent
Elongation of inch sections....	".10, ".11*

No. 6964.

Marks, $\substack{S\ 35\\2\ P\ Y\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00060	.00025	....	....	
28,000	.00090	.00030	....	....	
29,000	.00095	.00005	....	....	Elastic limit.
30,000	.00550	.00455	....	....	
31,000	.00630	.00080	....	....	
32,000	.00690	.00060	....	....	
33,000	.00750	.00060	....	....	
34,000	.00825	.00075	....	....	
77,400	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	77,400
Elastic limit per square inch of original section ....do...	29,000
Elongation per inch after rupture ....inch..	.1900
Elongation per inch under strain at elastic limit ....do...	.00095
Reduction in diameter at point of rupture ....do...	.055
Reduction in area after rupture, per cent of original section	20.5
Position of rupture	″.9 from neck
Character of broken surface	granular, silky spot at the circumference
Elongation of inch sections	″.21*, ″.17

No. 6978.

Marks, $\overset{S\ 35}{S\ P\ Y\ 15}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00065	.00035	....	....	
30,000	.00100	.00035	....	....	
36,000	.00140	.00040	....	....	
37,000	.00145	.00005	....	....	
38,000	.00150	.00005	....	....	Elastic limit.
39,000	.00740	.00590	....	....	
40,000	.00785	.00045	....	....	
41,000	.00825	.00040	....	....	
42,000	.00865	.00040	....	....	
43,000	.00950	.00085	....	....	
88,600	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	88,600
Elastic limit per square inch of original section ....do...	38,000
Elongation per inch after rupture ....inch..	.1400
Elongation per inch under strain at elastic limit ....do...	.00150
Reduction in diameter at point of rupture............do...	.035
Reduction in area after rupture, per cent of original section	13.2
Position of rupture............	".15 from neck
Character of broken surface	fine granular
Elongation of inch sections	".16*, ".12

No. 6947.

Marks, $\overset{\text{S 86}}{\text{P Y 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
28,000	.00090	.00030	....	....	Elastic limit.
29,000	.00510	.00420	....	....	
30,000	.00625	.00115	....	....	
31,000	.00705	.00080	....	....	
32,000	.00800	.00095	....	....	
33,000	.00875	.00075	....	....	
73,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	73,100
Elastic limit per square inch of original section	do...	28,000
Elongation per inch after rupture	inch..	.1800
Elongation per inch under strain at elastic limit	do...	.00090
Reduction in diameter at point of rupture	do...	.055
Reduction in area after rupture, per cent of original section		20.5
Position of rupture		1″ from neck
Character of broken surface		granular, silky spot at the circumference
Elongation of inch sections		″.19*, ″.17

No. 6965.

Marks, $\overset{S\ 38}{P\ Y\ 15}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	
30,000	.00095	.00030	....	....	
31,000	.00105	.00010	....	....	Elastic limit.
32,000	.00855	.00750	....	....	
33,000	.00900	.00045	....	....	
34,000	.00990	.00090	....	....	
35,000	.01065	.00075	....	....	
36,000	.01150	.00085	....	....	
73,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	73,500
Elastic limit per square inch of original section ....do...	31,000
Elongation per inch after rupture ....inch..	.1900
Elongation per inch under strain at elastic limit ....do...	.00105
Reduction in diameter at point of rupture ....do...	.055
Reduction in area after rupture, per cent of original section	20.5
Position of rupture	".75 from neck
Character of broken surface	granular, silky spot at the circumference
Elongation of inch sections	".20*, ".18

No. 6950.

Marks, $\overset{S\,40}{\text{P.Y.15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00060	.00025	....	....	
30,000	.00100	.00040	....	....	Elastic limit.
31,000	.00980	.00880	....	....	
32,000	.01075	.00095	....	....	
33,000	.01160	.00085	....	....	
34,000	.01260	.00100	....	....	
35,000	.01400	.00140	....	....	
67,250	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	67,250
Elastic limit per square inch of original section	do...	30,000
Elongation per inch after rupture	inch..	.1850
Elongation per inch under strain at elastic limit	do...	.00100
Reduction in diameter at point of rupture	do...	.055
Reduction in area after rupture, per cent of original section		20.5
Position of rupture		1″ from neck
Character of broken surface		granular, silky spot at the circumference
Elongation of inch sections		″.20*, ″.17

No. 6951.

Marks, $\overset{S\ 42}{\text{P Y 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00035	.00020	....	....	
20,000	.00065	.00030	....	....	
30,000	.00100	.00035	....	....	Elastic limit.
31,000	.00875	.00775	....	....	
32,000	.00950	.00075	....	....	
33,000	.01050	.00100	....	....	
34,000	.01150	.00100	....	....	
35,000	.01250	.00100	....	....	
67,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	67,900
Elastic limit per square inch of original section	do...	30,000
Elongation per inch after rupture	inch..	.1550
Elongation per inch under strain at elastic limit	do...	.00100
Reduction in diameter at point of rupture	do...	.045
Reduction in area after rupture, per cent of original section		16.9
Position of rupture		1″.05 from neck
Character of broken surface		granular 60 per cent, silky 40 per cent
Elongation of inch sections		″.14, ″.17*

No. 6952.

Marks, $\overset{S\,43}{P.Y.15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	
30,000	.00105	.00040	....	....	Elastic limit.
31,000	.00675	.00570	....	....	
32,000	.00740	.00065	....	....	
33,000	.00810	.00070	....	....	
34,000	.00900	.00090	....	....	
35,000	.00990	.00090	....	....	
73,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	73,900
Elastic limit per square inch of original section ....do...	30,000
Elongation per inch after rupture ....inch..	.1850
Elongation per inch under strain at elastic limit........do...	.00105
Reduction in diameter at point of rupture ....do...	.055
Reduction in area after rupture, per cent of original section........	20.5
Position of rupture	1″ from neck
Character of broken surface	granular 70 per cent, silky 30 per cent
Elongation of inch sections	″.18, ″.19*

No. 6973.

Marks, $\overset{\text{S 45}}{\text{P. Y.}}$ 15
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	
30,000	.00100	.00035	....	....	
35,000	.00135	.00035	....	....	Elastic limit.
	.00450	.00315	....	....	
36,000	.00705	.00255	....	....	
37,000	.00760	.00055	....	....	
38,000	.00840	.00080	....	....	
39,000	.00900	.00060	....	....	
40,000	.00980	.00080	....	....	
69,550	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	69,550
Elastic limit per square inch of original section	do...	35,000
Elongation per inch after rupture	inch..	.0550
Elongation per inch under strain at elastic limit	do...	.00135
Reduction in diameter at point of rupture	do...	.025
Reduction in area after rupture, per cent of original section		9.5
Position of rupture		″.9 from neck
Character of broken surface		granular, cavity ″.08 diameter at the circumference
Elongation of inch sections		″.05, ″.06*

No. 6993.

Marks, $\overset{S\ 45}{2\ P\ Y\ 15}$

Diameter, ″.505.

Sectional area, .20 square inch.

Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
30,000	.00095	.00035	....	....	
35,000	.00120	.00025	....	....	Elastic limit.
36,000	.00495	.00375	....	....	
37,000	.00590	.00095	....	....	
38,000	.00680	.00090	....	....	
39,000	.00735	.00055	....	....	
40,000	.00800	.00065	....	....	
85,600	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	85,600
Elastic limit per square inch of original section ....do...	35,000
Elongation per inch after rupture ....inch..	.1850
Elongation per inch under strain at elastic limit ....do...	.00120
Reduction in diameter at point of rupture........do...	.055
Reduction in area after rupture, per cent of original section........	20.5
Position of rupture	1″ from neck
Character of broken surface........	granular, silky spot at circumference
Elongation of inch sections	″.20*, ″.17

No. 6983.

Marks, $\overset{8\ 47}{\text{P Y 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
30,000	.00100	.00040	....	....	
33,000	.00110	.00010	....	....	Elastic limit.
34,000	.00135	.00025	....	....	
35,000	.00550	.00415	....	....	
36,000	.00650	.00100	....	....	
37,000	.00700	.00050	....	....	
38,000	.00800	.00100	....	....	
76,550	....	....	....	....	Tensile strength

General summary.

Tensile strength per square inch of original section	pounds..	76,550
Elastic limit per square inch of original section	do...	33,000
Elongation per inch after rupture	inch..	.0700
Elongation per inch under strain at elastic limit	do...	.00110
Reduction in diameter at point of rupture	do...	.025
Reduction in area after rupture, per cent of original section		9.5
Position of rupture		″.5 from neck
Character of broken surface		granular, silky spot at the circumference
Elongation of inch sections		″.06, ″.08*

No. 6992.

Marks, $\overset{8\ 47}{2\ P\ Y\ 15}$

Diameter, ".505.

Sectional area, .20 square inch.

Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	
30,000	.00100	.00035	....	....	
33,000	.00115	.00015	....	....	Elastic limit.
34,000	.00135	.00020	....	....	
35,000	.01150	.01015	....	....	
36,000	.01190	.00040	....	....	
37,000	.01250	.00060	....	....	
38,000	.01350	.00100	....	....	
71,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	71,000
Elastic limit per square inch of original section	do...	33,000
Elongation per inch after rupture	inch..	.1200
Elongation per inch under strain at elastic limit	do...	.00115
Reduction in diameter at point of rupture	do...	.035
Reduction in area after rupture, per cent of original section		13.2
Position of rupture		".75 from neck
Character of broken surface		granular, silky spot at circumference
Elongation of inch sections		".11, ".13*

No. 7020.

Marks, $\overset{S\ 47}{3\ P\ Y\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00080	.00045	....	....	
30,000	.00110	.00030	....	....	
36,000	.00145	.00035	....	....	Elastic limit.
37,000	.00800	.00655	....	....	
38,000	.00975	.00175	....	....	
39,000	.01010	.00035	....	....	
40,000	.01115	.00105	....	....	
41,000	.01200	.00085	....	....	
79,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	79,900
Elastic limit per square inch of original section ....do...	36,000
Elongation per inch after rupture ....inch..	.1600
Elongation per inch under strain at elastic limit ....do...	.00145
Reduction in diameter at point of rupture............do...	.045
Reduction in area after rupture, per cent of original section............	16.9
Position of rupture	″.60 from neck
Character of broken surface............	granular, silky spot at the circumference
Elongation of inch sections............	″.16, ″.16*

No. 6984.

Marks, $\overset{S\,49}{P\,Y\,15}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.		
10,000	.00035	.00025			
20,000	.00060	.00025			
30,000	.00100	.00040			
36,000	.00120	.00020			Elastic limit.
37,000	.00815	.00695			
38,000	.00850	.00035			
39,000	.00910	.00060			
40,000	.00960	.00050			
41,000	.01050	.00090			
78,500					Tensile strength.

General summary.

Tensile strength per square inch of original section .... pounds..	78,500
Elastic limit per square inch of original section .... do...	36,000
Elongation per inch after rupture .... inch..	.0900
Elongation per inch under strain at elastic limit .... do...	.00120
Reduction in diameter at point of rupture .... do...	.025
Reduction in area after rupture, per cent of original section	9.5
Position of rupture	".3 from neck
Character of broken surface	granular, silky spot at the circumference
Elongation of inch sections	".10*, ".06

No. 6994.

Marks, $\overset{S\ 49}{2\ P\ Y\ 15}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	
25,000	.00090	.00025	....	....	Elastic limit.
26,000	.00115	.00025	....	....	
27,000	.00165	.00050	....	....	
28,000	.00425	.00260	....	....	
29,000	.00575	.00150	....	....	
30,000	.00640	.00065	....	....	
69,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	69,100
Elastic limit per square inch of original section	do...	25,000
Elongation per inch after rupture	inch..	.2350
Elongation per inch under strain at elastic limit	do...	.00090
Reduction in diameter at point of rupture	do...	.075
Reduction in area after rupture, per cent of original section		27.4
Position of rupture		1" from neck
Character of broken surface		granular, dull silky spot at the circumference
Elongation of inch sections		".25*, ".22

No. 6988.

Marks, $\overset{S\ 58}{P\ Y\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	
30,000	.00105	.00040	....	....	
35,000	.00140	.00035	....	....	Elastic limit.
37,000	.00600	.00460	....	....	
38,000	.00700	.00100	....	....	
39,000	.00750	.00050	....	....	
40,000	.00800	.00050	....	....	
41,000	.00875	.00075	....	....	
85,600	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ......pounds..	85,600
Elastic limit per square inch of original section ......do...	35,000
Elongation per inch after rupture ......inch..	.1250
Elongation per inch under strain at elastic limit ......do...	.00140
Reduction in diameter at point of rupture ......do...	.035
Reduction in area after rupture, per cent of original section	13.2
Position of rupture	″.5 from neck
Character of broken surface	granular, silky spot at the circumference
Elongation of inch sections	″.11, ″.14*

No. 7006.

Marks, $\overset{\text{S 53}}{\text{2 P Y 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.		
10,000	.00030	.00020			
20,000	.00060	.00030			
30,000	.00100	.00040			
32,000	.00115	.00015			Elastic limit.
33,000	.00875	.00760			
34,000	.00965	.00090			
35,000	.01065	.00100			
36,000	.01150	.00085			
37,000	.01205	.00055			
74,050					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	74,050
Elastic limit per square inch of original section	do	32,000
Elongation per inch after rupture	inch	.2100
Elongation per inch under strain at elastic limit	do	.00115
Reduction in diameter at point of rupture	do	.065
Reduction in area after rupture, per cent of original section		23.9
Position of rupture		at middle of stem
Character of broken surface		granular, silky oblique spot near circumference; opened cracks in stem.
Elongation of inch sections		″ 20* ″ 22*

No. 6989.

Marks, $\overset{\text{S 55}}{\text{P Y}}{}_{15}$

Diameter, ".505.

Sectional area, .20 square inch.

Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00070	.00035	....	....	
30,000	.00105	.00035	....	....	
38,000	.00135	.00030	....	....	
39,000	.00140	.00005	....	....	Elastic limit.
40,000	.00910	.00770	....	....	
41,000	.00960	.00050	....	....	
42,000	.01025	.00065	....	....	
43,000	.01125	.00100	....	....	
44,000	.01200	.00075	....	....	
75,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	75,100
Elastic limit per square inch of original section	do...	39,000
Elongation per inch after rupture	inch..	.0650
Elongation per inch under strain at elastic limit	do...	.00140
Reduction in diameter at point of rupture	do...	.025
Reduction in area after rupture, per cent of original section		9.5
Position of rupture		at middle of stem
Character of broken surface		granular, dull silky spot at the circumference
Elongation of inch sections		".06*, ".07*

No. 7007.

Marks, $\overset{\text{S 55}}{\text{2 P Y 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
30,000	.00100	.00040	....	....	Elastic limit.
31,000	.00940	.00840	....	....	
32,000	.01015	.00075	....	....	
33,000	.01130	.00015	....	....	
34,000	.01240	.00110	....	....	
35,000	.01350	.00110	....	....	
68,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section......pounds..	68,000
Elastic limit per square inch of original section......do...	30,000
Elongation per inch after rupture......inch..	.2250
Elongation per inch under strain at elastic limit......do...	.00100
Reduction in diameter at point of rupture......do...	.075
Reduction in area after rupture, per cent of original section......	27.4
Position of rupture......	″.95 from neck
Character of broken surface......	granular 60 per cent, silky 40 per cent
Elongation of inch sections......	″.20, ″.25*

No. 6991.

Marks, $\overset{\text{S 56}}{\text{P Y 15}}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00065	.00035	....	....	
30,000	.00100	.00035	....	....	
38,000	.00135	.00035	....	....	Elastic limit.
39,000	.00785	.00650	....	....	
40,000	.00835	.00050	....	....	
41,000	.00915	.00080	....	....	
42,000	.00975	.00060	....	....	
43,000	.01060	.00085	....	....	
83,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	83,100
Elastic limit per square inch of original section	do...	38,000
Elongation per inch after rupture	inch..	.1500
Elongation per inch under strain at elastic limit	do...	.00135
Reduction in diameter at point of rupture	do...	.055
Reduction in area after rupture, per cent of original section		20.5
Position of rupture		".95 from neck
Character of broken surface		granular 60 per cent, silky 40 per cent
Elongation of inch sections		".17*, ".13

No. 6990.

Marks, $^{S\ 57}_{P\ Y\ 15}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00035	.00020	....	....	
20,000	.00065	.00030	....	....	
30,000	.00100	.00035	....	....	
36,000	.00140	.00040	....	....	
37,000	.00150	.00010	....	....	Elastic limit.
38,000	.01000	.00850	....	....	
39,000	.01075	.00075	....	....	
40,000	.01150	.00075	....	....	
41,000	.01210	.00060	....	....	
42,000	.01300	.00090	....	....	
79,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section .... pounds..	79,000
Elastic limit per square inch of original section .... do...	37,000
Elongation per inch after rupture .... inch..	.1500
Elongation per inch under strain at elastic limit .... do...	.00150
Reduction in diameter at point of rupture .... do...	.045
Reduction in area after rupture, per cent of original section	16.9
Position of rupture	at middle of stem
Character of broken surface	granular 80 per cent, silky 20 per cent
Elongation of inch sections	".14*, ".16*

No. 7008.

Marks, $\overset{S\ 62}{P\ Y\ 15}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	00060	.00030	....	....	
30,000	.00095	.00035	....	....	
39,000	.00135	.00040	....	....	Elastic limit.
40,000	.00425	.00290	....	....	
41,000	.00535	.00110	....	....	
42,000	.00590	.00055	....	....	
43,000	.00650	.00060	....	....	
44,000	.00705	.00055	....	....	
96,700	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section..................................pounds..	96,700
Elastic limit per square inch of original section..do...	39,000
Elongation per inch after rupture ....inch..	.1500
Elongation per inch under strain at elastic limit..do...	.00135
Reduction in diameter at point of rupture ....do...	.045
Reduction in area after rupture, per cent of original section	16.9
Position of rupture...	".55 from neck
Character of broken surface..................................	granular, silky spot at the circumference
Elongation of inch sections..	".16*, ".14

No. 7083.

Marks, $\overset{S\ 62}{2\ P\ Y\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00065	.00035	....	....	
28,000	.00100	.00035	....	....	
29,000	.00105	.00005	....	....	Elastic limit.
30,000	.00225	.00120	....	....	
31,000	.00350	.00125	....	....	
32,000	.00400	.00050	....	....	
33,000	.00500	.00100	....	....	
34,000	.00600	.00100	....	....	
71,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	71,100
Elastic limit per square inch of original section	do...	29,000
Elongation per inch after rupture	inch..	.1650
Elongation per inch under strain at elastic limit	do...	.00105
Reduction in diameter at point of rupture	do...	.055
Reduction in area after rupture, per cent of original section		20.5
Position of rupture		at middle of stem
Character of broken surface		granular, silky spot at the circumference
Elongation of inch sections		″.18*, ″.15

No. 7009.

Marks, $\overset{S\ 63}{\text{P Y 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
30,000	.00100	.00040	....	....	
32,000	.00110	.00010	....	....	Elastic limit.
33,000	.01200	.01090	....	....	
34,000	.01245	.00045	....	....	
35,000	.01340	.00095	....	....	
36,000	.01450	.00110	....	....	
37,000	.01600	.00150	....	....	
66,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	66,500
Elastic limit per square inch of original section ....do...	32,000
Elongation per inch after rupture ....inch..	.2450
Elongation per inch under strain at elastic limit ....do...	.00110
Reduction in diameter at point of rupture ....do...	.075
Reduction in area after rupture, per cent of original section	27.4
Position of rupture	1″.06 from neck
Character of broken surface	silky, 50 per cent of surface interspersed with fine granulation
Elongation of inch sections	″.23, ″.26

No. 7018.

Marks, $\overset{S\,65}{PY\,15}$

Diameter, ".505.

Sectional area, .20 square inch.

Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00030	.00015	....	....	
20,000	.00065	.00035	....	....	
30,000	.00105	.00040	....	....	
31,000	.00110	.00005	....	....	Elastic limit.
32,000	.00435	.00325	....	....	
33,000	.00875	.00440	....	....	
34,000	.00900	.00025	....	....	
35,000	.00935	.00035	....	....	
36,000	.01025	.00090	....	....	
37,000	.01110	.00085	....	....	
70,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	70,000
Elastic limit per square inch of original section	do...	31,000
Elongation per inch after rupture	inch..	.1000
Elongation per inch under strain at elastic limit	do ..	.00110
Reduction in diameter at point of rupture	do...	.035
Reduction in area after rupture, per cent of original section		13.2
Position of rupture		".45 from neck
Character of broken surface		granular, dull spot at the circumference
Elongation of inch sections		".10, ".10*

No. 7122.

Marks, $\overset{S\ 65}{2\ P\ Y\ 15}$

Diameter, ″.505.

Sectional area, .20 square inch.

Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00015	.00005	....	....	
20,000	.00035	.00020	....	....	
25,000	.00060	.00025	....	....	
29,000	....	....	....	....	Elastic limit.
30,000	.00390	.00330	....	....	
31,000	.00560	.00170	....	....	
32,000	.00650	.00090	....	....	
33,000	.00725	.00075	....	....	
34,000	.00850	.00125	....	....	
35,000	.00950	.00100	....	....	
69,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section......pounds..	69,900
Elastic limit per square inch of original section......do...	29,000
Elongation per inch after rupture......inch..	.2100
Reduction in diameter at point of rupture......do...	.065
Reduction in area after rupture, per cent of original section......	20.5
Position of rupture......	1″.10 from neck
Character of broken surface......	granular, silky spot at the circumference
Elongation of inch sections......	″.22*, ″.20

No. 7021.

Marks, $\overset{S\ 66}{P\ Y\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	
30,000	.00100	.00035	....	....	
31,000	.00110	.00010	....	....	
32,000	.00120	.00010	....	....	
33,000	.00125	.00005	....	....	Elastic limit.
34,000	.00150	.00025	....	....	
	.00960	.00810	....	....	
35,000	.01040	.00080	....	....	
36,000	.01115	.00075	....	....	
37,000	.01200	.00085	....	....	
38,000	.01330	.00130	....	....	
72,050	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	72,050
Elastic limit per square inch of original section....do...	33,000
Elongation per inch after rupture....inch..	.1750
Elongation per inch under strain at elastic limit....do...	.00125
Reduction in diameter at point of rupture....do...	.045
Reduction in area after rupture, per cent of original section....	16.9
Position of rupture	1″ from neck
Character of broken surface........	granular, silky spot at the circumference; opened cracks in stem
Elongation of inch sections....	″.18*, ″.17

No. 7019.

Marks, $\overset{S\ 67}{P\ Y\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.		
10,000	.00030	.00020			
20,000	.00065	.00035			
25,000	.00095	.00030			
27,000	.00105	.00010			
28,000	.00120	.00015			Elastic limit.
29,000	.00145	.00025			
30,000	.00250	.00105			
31,000	.00450	.00200			
32,000	.00650	.00200			
33,000	.00800	.00150			
34,000	.00900	.00100			
35,000	.00990	.00090			
69,900					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	69,900
Elastic limit per square inch of original section	do...	28,000
Elongation per inch after rupture	inch..	.1400
Elongation per inch under strain at elastic limit	do...	.00120
Reduction in diameter at point of rupture	do...	.045
Reduction in area after rupture, per cent of original section		16.9
Position of rupture		″.40 from neck
Character of broken surface		granular, dull spot at the circumference
Elongation of inch sections		″.13, ″.15

No. 7123.

Marks, $\overset{S\ 67}{2\ P\ Y\ 15}$

Diameter, ".505.

Sectional area, .20 square inch.

Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00030	.00015	....	....	
20,000	.00070	.00040	....	....	
25,000	.00090	.00020	....	....	
28,000	.00105	.00015	....	....	
29,000	.00110	.00005	....	....	
30,000	.00115	.00005	....	....	Elastic limit.
31,000	.00200	.00085	....	....	
32 000	.00450	.00250	....	....	
33,000	.00765	.00315	....	....	
34,000	.00875	.00110	....	....	
35,000	.00975	.00100	....	....	
36,000	.01050	.00075	....	....	
68,950	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section......pounds..	68,950
Elastic limit per square inch of original section......do...	30,000
Elongation per inch after rupture......inch..	.1200
Elongation per inch under strain at elastic limit......do...	.00115
Reduction in diameter at point of rupture......do...	.035
Reduction in area after rupture, per cent of original section......	13.2
Position of rupture......	1".05 from neck
Character of broken surface......	granular, silky spot at the circumference
Elongation of inch sections......	".10, ".14*

No. 7194.

Marks, $\overset{S\ 67}{3\ \text{P.}}$ Y 15
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00025	.00015	....	....	
20,000	.00060	.00035	....	....	
22,000	.00070	.00010	....	....	
23,000	.00075	.00005	....	....	Elastic limit.
24,000	.00100	.00025	....	....	
25,000	.00135	.00035	....	....	
26,000	.00170	.00035	....	....	
27,000	.00400	.00230	....	....	
28,000	.00550	.00150	....	....	
29,000	.00660	.00110	....	....	
66,450	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	66,450
Elastic limit per square inch of original section	do...	23,000
Elongation per inch after rupture	inch..	.1750
Elongation per inch under strain at elastic limit	do...	.00075
Reduction in diameter at point of rupture	do...	.055
Reduction in area after rupture, per cent of original section		20.5
Position of rupture		″.50 from neck
Character of broken surface		granular, silvery luster, silky spot at circumference
Elongation of inch sections		″.16, ″.19*

No. 7022.

Marks, $\overset{S\ 69}{P\ Y\ 15}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00060	.00025	....	....	
30,000	.00100	.00040	....	....	
31,000	.00110	.00010	....	....	Elastic limit.
32,000	.00650	.00540	....	....	
33,000	.00750	.00100	....	....	
34,000	.00850	.00100	....	....	
35,000	.00950	.00100	....	....	
36,000	.01030	.00080	....	....	
71,600	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	71,600
Elastic limit per square inch of original section ....do...	31,000
Elongation per inch after rupture ....inch..	.2100
Elongation per inch under strain at elastic limit ....do...	.00110
Reduction in diameter at point of rupture....................do...	.055
Reduction in area after rupture, per cent of original section	20.5
Position of rupture	".95 from neck
Character of broken surface	granular 60 per cent, dull silky 40 per cent
Elongation of inch sections	".24*, ".18

No. 7023.

Marks, $\begin{smallmatrix}\text{S 70}\\ \text{P Y 15}\end{smallmatrix}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00065	.00035	....	....	
24,000	.00085	.00020	....	....	Elastic limit.
25,000	.00100	.00015	....	....	
26,000	.00190	.00090	....	....	
27,000	.00710	.00520	....	....	
28,000	.00825	.00115	....	....	
29,000	.00900	.00075	....	....	
30,000	.01050	.00150	....	....	
61,800	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	61,800
Elastic limit per square inch of original section........do...	24,000
Elongation per inch after rupture ....inch..	.1650
Elongation per inch under strain at elastic limit ....do...	.00085
Reduction in diameter at point of rupture........do...	.055
Reduction in area after rupture, per cent of original section	20.5
Position of rupture	″.65 from neck
Character of broken surface........	silky, interspersed with granular metal
Elongation of inch sections	″.19*, ″.14

No. 7084.

Marks, $\overset{8\ 71}{\text{P Y}}$ 15
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00025	.00015	....	....	
20,000	.00060	.00035	....	....	
30,000	.00095	.00035	....	....	
33,000	.00110	.00015	....	....	Elastic limit.
34,000	.00750	.00640	....	....	
35,000	.00900	.00150	....	....	
36,000	.00965	.00065	....	....	
37,000	.01050	.00085	....	....	
38,000	.01160	.00110	....	....	
73,400	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	73,400
Elastic limit per square inch of original section ....do...	33,000
Elongation per inch after rupture ....inch..	.1300
Elongation per inch under strain at elastic limit ....do...	.00110
Reduction in diameter at point of rupture ....do...	.045
Reduction in area after rupture, per cent of original section	16.9
Position of rupture	″.5 from neck
Character of broken surface	granular, silky spot at the circumference
Elongation of inch sections	″.12, ″.14*

No. 7168.

Marks, $\overset{S\ 71}{2\ P\ Y\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00005	.00005	0.	....	
10,000	.00015	.00010	....	....	
20,000	.00050	.00035	....	....	
30,000	.00085	.00035	....	....	
34,000	.00100	.00015	....	....	
35,000	.00105	.00005	....	....	Elastic limit.
36,000	.00900	.00795	....	....	
37,000	.00950	.00050	....	....	
38,000	.01025	.00075	....	....	
39,000	.01100	.00075	....	....	
40,000	.01250	.00150	....	....	
41,000	.01300	.00050	....	....	
75,950	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section .... pounds..	75,950
Elastic limit per square inch of original section .... do...	35,000
Elongation per inch after rupture .... inch..	.1900
Elongation per inch under strain at elastic limit .... do...	.00105
Reduction in diameter at point of rupture .... do...	.055
Reduction in area after rupture, per cent of original section	20.5
Position of rupture	1″.15 from neck
Character of broken surface	granular, silky spot at circumference
Elongation of inch sections	″.19*, ″.19

No. 7077.

Marks, $\overset{S\ 73}{PY\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	0.	....	
30,000	.00100	.00040	....	....	
31,000	.00105	.00005	....	....	Elastic limit.
32,000	.00500	.00395	....	....	
33,000	.00740	.00240	....	....	
34,000	.00815	.00075	....	....	
35,000	.00920	.00105	....	....	
36,000	.01000	.00080	....	....	
71,700	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	71,700
Elastic limit per square inch of original section	do...	31,000
Elongation per inch after rupture	inch..	.1250
Elongation per inch under strain at elastic limit	do...	.00105
Reduction in diameter at point of rupture	do...	.035
Reduction in area after rupture, per cent of original section		13.2
Position of rupture		″.50 from neck
Character of broken surface		granular, silky spot at circumference
Elongation of inch sections		″.11, ″.14*

No. 7169.

Marks, $\overset{\text{S 73}}{\text{2 P Y 15}}$

Diameter, ″.505.

Sectional area, .20 square inch.

Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00005	.00006	0.	....	
10,000	.00015	.00010	....	....	
20,000	.00050	.00035	....	....	
25,000	.00095	.00045	....	....	Elastic limit.
26,000	.00135	.00040	....	....	
27,000	.00150	.00015	....	....	
28,000	.00250	.00100	....	....	
29,000	.00290	.00040	....	....	
30,000	.00375	.00085	....	....	
31,000	.00450	.00075	....	....	
32,000	.00550	.00100	....	....	
33,000	.00600	.00050	....	....	
34,000	.00700	.00100	....	....	
35,000	.00800	.00100	....	....	
70,950	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	70,950
Elastic limit per square inch of original section	do...	25,000
Elongation per inch after rupture	inch..	.2150
Elongation per inch under strain at elastic limit	do...	.00095
Reduction in diameter at point of rupture	do...	.055
Reduction in area after rupture, per cent of original section		20.5
Position of rupture		″.80 from neck
Character of broken surface		granular 50 per cent, silky 50 per cent
Elongation of inch sections		″.23*, ″.20

No. 7085.

Marks, $\overset{S\ 74}{P\ Y\ 15}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	
29,000	.00105	.00040	....	....	Elastic limit.
30,000	.00800	.00695	....	....	
31,000	.00875	.00075	....	....	
32,000	.01000	.00125	....	....	
33,000	.01080	.00080	....	....	
34,000	.01165	.00085	....	....	
65,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	65,100
Elastic limit per square inch of original section	do...	29,000
Elongation per inch after rupture	inch..	.0950
Elongation per inch under strain at elastic limit	do...	.00105
Reduction in diameter at point of rupture	do...	.035
Reduction in area after rupture, per cent of original section		13.2
Position of rupture		".1 from neck
Character of broken surface		granular, silky spot at circumference; opened cracks along the stem
Elongation of inch sections		".09, ".10

No. 7174.

Marks, $\overset{S\ 74}{2\ P\ Y\ 15}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00020	.00020	0.		
10,000	.00050	.00030			
20,000	.00095	.00045			
25,000	.00125	.00030			
27,000	.00135	.00010			
29,000	.00145	.00010			Elastic limit.
30,000	.00340	.00195			
31,000	.00600	.00260			
32,000	.00975	.00375			
33,000	.01190	.00215			
34,000	.01315	.00125			
35,000	.01360	.00045			
67,000					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	67,000
Elastic limit per square inch of original section	do...	29,000
Elongation per inch after rupture	inch..	.2350
Elongation per inch under strain at elastic limit	do...	.00145
Reduction in diameter at point of rupture	do...	.075
Reduction in area after fracture, per cent of original section		27.4
Position of rupture		1".20 from neck
Character of broken surface		granular, silky spot at circumference
Elongation of inch sections		".21, ".26*

No. 7078.

Marks, $\overset{\text{S 75}}{\text{P Y 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00025	.00015	....	....	
20,000	.00060	.00035	....	....	
30,000	.00100	.00040	....	....	
31,000	.00105	.00005	....	....	Elastic limit.
32,000	.00600	.00495	....	....	
33,000	.00665	.00065	....	....	
34,000	.00750	.00085	....	....	
35,000	.00825	.00075	....	....	
36,000	.00925	.00100	....	....	
73,050	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section..........pounds..	73,050
Elastic limit per square inch of original section..........do...	31,000
Elongation per inch after rupture..........inch..	.1000
Elongation per inch under strain at elastic limit..........do...	.00105
Reduction in diameter at point of rupture..........do...	.035
Reduction in area after rupture, per cent of original section..........	18.2
Position of rupture..........	1″ from neck
Character of broken surface..........	granular, silky spot at the circumference
Elongation of inch sections..........	″.09, ″.11*

No. 7165.

Marks, $\overset{8\ 75}{2\ P\ Y\ 15}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00020	.00010	....	....	
20,000	.00060	.00040	....	....	
30,000	.00100	.00040	....	....	
31,000	.00105	.00005	....	....	Elastic limit.
32,000	.00825	.00720	....	....	
33,000	.00900	.00075	....	....	
34,000	.01000	.00100	....	....	
35,000	.01110	.00110	....	....	
36,000	.01200	.00090	....	....	
37,000	.01300	.00100	....	....	
69,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	69,000
Elastic limit per square inch of original section	do...	31,000
Elongation per inch after rupture	inch..	.1600
Elongation per inch under strain at elastic limit	do...	.00105
Reduction in diameter at point of rupture	do...	.045
Reduction in area after rupture, per cent of original section		16.9
Position of rupture		at middle of stem
Character of broken surface		granular 75 per cent, silky 25 per cent
Elongation of inch sections		*.15, *.17*

No. 7086.

Marks, $\overset{8\ 76}{\text{P Y 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
30,000	.00100	.00040	....	....	
32,000	.00115	.00015	....	....	Elastic limit.
33,000	.00715	.00600	....	....	
34,000	.00825	.00110	....	....	
35,000	.00875	.00050	....	....	
36,000	.00975	.00100	....	....	
37,000	.01080	.00105	....	....	
74,650	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	74,650
Elastic limit per square inch of original section	do...	32,000
Elongation per inch after rupture	inch..	.1650
Elongation per inch under strain at elastic limit	do...	.00115
Reduction in diameter at point of rupture	do...	.055
Reduction in area after rupture, per cent of original section		20.5
Position of rupture		1″ from neck
Character of broken surface		granular 70 per cent, silky 30 per cent
Elongation of inch sections		″.15, ″.18

No. 7087.

Marks, $\overset{S\ 77}{P\ Y}\ 15$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00025	.00015	....	....	
20,000	.00055	.00030	....	....	
30,000	.00090	.00035	....	....	
32,000	00105	.00015	....	....	Elastic limit.
33,000	.00735	.00630	....	....	
34,000	.00800	.00065	....	....	
35,000	.00875	.00075	....	....	
36,000	.00950	.00075	....	....	
37,000	.01095	.00145	....	....	
72,050	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	72,050
Elastic limit per square inch of original section	do...	32,000
Elongation per inch after rupture	inch..	.1200
Elongation per inch under strain at elastic limit	do...	.00105
Reduction in diameter at point of rupture	do...	.045
Reduction in area after rupture, per cent of original section		16.9
Position of rupture		".9 from neck
Character of broken surface		silky 60 per cent, granular 40 per cent
Elongation of inch sections		".13*, ".11

No. 7175.

Marks, $^{S\ 77}_{2\ P\ Y\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00040	.00025	....	....	
20,000	.00070	.00030	....	....	
30,000	.00110	.00040	....	....	
32,000	.00120	.00010	....	....	Elastic limit.
33,000	.00550	.00430	....	....	
34,000	.00925	.00375	....	....	
35,000	.01125	.00200	....	....	
36,000	.01225	.00100	....	....	
37,000	.01240	.00015	....	....	
38,000	.01260	.00020	....	....	
72,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	72,500
Elastic limit per square inch of original section	do...	32,000
Elongation per inch after rupture	inch..	.1800
Elongation per inch under strain at elastic limit	do...	.00120
Reduction in diameter at point of rupture	do...	.055
Reduction in area after rupture, per cent of original section		20.5
Position of rupture		1″.10 from neck
Character of broken surface		granular 85 per cent, silky 15 per cent
Elongation of inch sections		″.18, ″.18*

No. 7176.

Marks, $^{8\ 77}_{2\ P\ Y\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00020	.00020	0.	....	
10,000	.00040	.00020	....	....	
20,000	.00090	.00050	....	....	
22,000	.00100	.00010	....	....	
24,000	.00115	.00015	....	....	Elastic limit.
25,000	.00140	.00025	....	....	
26,000	.00195	.00055	....	....	
27,000	.00540	.00345	....	....	
28,000	.00710	.00170	....	....	
29,000	.00835	.00125	....	....	
30,000	.01025	.00190	....	....	
64,800	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	64,800
Elastic limit per square inch of original section	do...	24,000
Elongation per inch after rupture	inch..	.2500
Elongation per inch under strain at elastic limit	do...	.00115
Reduction in diameter at point of rupture	do...	.085
Reduction in area after rupture, per cent of original section		30.7
Position of rupture		″.80 from neck
Character of broken surface		silky
Elongation of inch sections		″.20, ″.30*

No. 7160.

Marks, $\overset{S\ 78}{P\ Y}\ 15$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.		
10,000	.00030	.00015			
20,000	.00070	.00040			
25,000	.00095	.00025			
27,000	.00105	.00010			
28,000	.00115	.00010			Elastic limit.
29,000	.00165	.00050			
30,000	.00195	.00030			
31,000	.00260	.00065			
32,000	.00600	.00340			
33,000	.00700	.00100			
34,000	.00805	.00105			
68,900					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	68,900
Elastic limit per square inch of original section	do	28,000
Elongation per inch after rupture	inch	.1000
Elongation per inch under strain at elastic limit	do	.00115
Reduction in diameter at point of rupture	do	.045
Reduction in area after rupture, per cent of original section		16.9
Position of rupture		″.25 from neck
Character of broken surface		granular 60 per cent, dull silky 40 per cent
Elongation of inch sections		″.11*, ″.09

No. 7195.

Marks, $\overset{\text{S 78}}{\text{2 P}}$ Y 15
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00025	.00015	....	....	
20,000	.00065	.00040	....	....	
25,000	.00085	.00020	....	....	
27,000	.00095	.00010	....	....	Elastic limit.
28,000	.00235	.00140	....	....	
29,000	.00380	.00145	....	....	
30,000	.00800	.00420	....	....	
31,000	.00910	.00110	....	....	
32,000	.00975	.00065	....	....	
33,000	.01075	.00100	....	....	
66,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	66,500
Elastic limit per square inch of original section ....do...	27,000
Elongation per inch after rupture ....inch..	.2350
Elongation per inch under strain at elastic limit ....do...	.00095
Reduction in diameter at point of rupture....................do...	.075
Reduction in area after rupture, per cent of original section....................	27.4
Position of rupture	″.90 from neck
Character of broken surface	granular 50 per cent, silky 50 per cent
Elongation of inch sections	″.19, ″.28

No. 7124.

Marks, $\overset{\text{S 79}}{\text{P Y 15}}$
Diameter, ″.505,
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00030	.00015	....	....	
20,000	.00065	.00035	....	....	
30,000	.00115	.00050	....	....	Elastic limit.
	.00500	.00385	....	....	
31,000	.00700	.00200	....	....	
32,000	.00810	.00110	....	....	
33,000	.00935	.00125	....	....	
34,000	.00975	.00040	....	....	
35,000	.01075	.00100	....	....	
66,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	66,500
Elastic limit per square inch of original section	do	30,000
Elongation per inch after rupture	inch	.1000
Elongation per inch under strain at elastic limit	do	.00115
Reduction in diameter at point of rupture	do	.035
Reduction in area after rupture, per cent of original section		13.2
Position of rupture		″.30 from neck
Character of broken surface		granular, silky spot at the circumference, containing a cavity about ″.10 diameter
Elongation of inch sections		″.10*, ″.10

No. 7125.

Marks, $\overset{\text{S 80}}{\text{P Y 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
29,000					Elastic limit, approximate.
40,000	.01245	.01245			
41,000	.01300	.00055			
42,000	.01400	.00100			
43,000	.01510	.00110			
44,000	.01625	.00115			
45,000	.01775	.00150			
66,400					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	66,400
Elastic limit per square inch of original section (approximate)	do...	29,000
Elongation per inch after rupture	inch..	.0650
Reduction in diameter at point of rupture	do...	.025
Reduction in area after rupture, per cent of original section		9.5
Position of rupture		″.90 from neck
Character of broken surface		granular 80 per cent, silky 20 per cent
Elongation of inch sections		″.07*, ″.06

No. 7177.

Marks, $\overset{S\ 80}{2\ P\ Y\ 15}$

Diameter, ″.505.

Sectional area, .20 square inch.

Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00000	.00000	0.	....	
10,000	.00010	.00010	....	....	
20,000	.00040	.00030	....	....	
25,000	.00055	.00015	....	....	
26,000	.00065	.00010	....	....	
27,000	.00075	.00010	....	....	
28,000	.00090	.00015	....	....	Elastic limit.
29,000	.00250	.00160	....	....	
30,000	.00400	.00150	....	....	
31,000	.00675	.00275	....	....	
32,000	.00840	.00165	....	....	
33,000	.00925	.00085	....	....	
34,000	.01125	.00200	....	....	
70,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	70,500
Elastic limit per square inch of original section	do	28,000
Elongation per inch after rupture	inch	.2100
Elongation per inch under strain at elastic limit	do	.00090
Reduction in diameter at point of rupture	do	.065
Reduction in area after rupture, per cent of original section		23.9
Position of rupture		1″.14 from neck
Character of broken surface		granular, silky spot at circumference
Elongation of inch sections		″.22*, ″.20

No. 7161.

Marks, $\overset{\text{S 83}}{\text{P Y 15}}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00035	.00020	....	....	
20,000	.00075	.00040	....	....	
25,000	.00100	.00025	....	....	
26,000	.00105	.00005	....	....	
27,000	.00115	.00010	....	....	Elastic limit.
28,000	.00150	.00035	....	....	
29,000	.00250	.00100	....	....	
30,000	.00560	.00310	....	....	
31,000	.00670	.00110	....	....	
32,000	.00800	.00130	....	....	
33,000	.00850	.00050	....	....	
34,000	.00950	.00100	....	....	
69,950	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	69,950
Elastic limit per square inch of original section	do...	27,000
Elongation per inch after rupture	inch...	.1650
Elongation per inch under strain at elastic limit	do...	.00115
Reduction in diameter at point of rupture	do...	.145
Reduction in area after rupture, per cent of original section		49.1
Position of rupture		1" from neck
Character of broken surface		granular, silky spot at circumference
Elongation of inch sections		",17*,".16

No. 7147.

Marks, $\genfrac{}{}{0pt}{}{\text{S 84}}{\text{P Y 15}}$

Diameter, ″.505.

Sectional area, .20 square inch.

Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00020	.00010	....	....	
20,000	.00050	.00030	....	....	
25,000	.00070	.00020	....	....	
27,000	.00085	.00015	....	....	
28,000	.00095	.00010	....	....	Elastic limit.
29,000	.00300	.00205	....	....	
30,000	.00575	.00275	....	....	
31,000	.00625	.00050	....	....	
32,000	.00725	.00100	....	....	
33,000	.00820	.00095	....	....	
34,000	.00920	.00100	....	....	
69,450	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	69,450
Elastic limit per square inch of original section........do...	28,000
Elongation per inch after rupture ....inch..	.1200
Elongation per inch under strain at elastic limit ....do...	.00095
Reduction in diameter at point of rupture........do...	.035
Reduction in area after rupture, per cent of original section........	13.2
Position of rupture	1″.05 from neck
Character of broken surface........	granular 80 per cent, silky 20 per cent
Elongation of inch sections........	″.11, ″.13

No. 7178.

Marks, $\overset{S\ 86}{P\ Y\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00005	.00005	0.		
10,000	.00020	.00015			
20,000	.00045	.00025			
25,000	.00065	.00020			
28,000	.00085	.00015			
30,000	.00090	.00010			
31,000	.00095	.00005			Elastic limit.
32,000	.00325	.00230			
33,000	.00650	.00325			
34,000	.00875	.00225			
35,000	.01000	.00125			
36,000	.01100	.00100			
70,400					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	70,400
Elastic limit per square inch of original section	do	31,000
Elongation per inch after rupture	inch	.1200
Elongation per inch under strain at elastic limit	do	.00095
Reduction in diameter at point of rupture	do	.035
Reduction in area after rupture, per cent of original section		13.2
Position of rupture		.″98 from neck
Character of broken surface		granular, silky spot at circumference
Elongation of inch sections		″.11, ″.13

No. 7196.

Marks, $\overset{S\ 86}{2\ P\ Y\ 15}$

Diameter, ″.505.

Sectional area, .20 square inch.

Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00025	.00010	....	....	
20,000	.00070	.00045	....	....	
22,000	.00080	.00010	....	....	
24,000	.00090	.00010	....	....	Elastic limit.
25,000	.00110	.00020	....	....	
26,000	.00135	.00025	....	....	
27,000	.00165	.00030	....	....	
28,000	.00200	.00035	....	....	
29,000	.00275	.00075	....	....	
30,000	.00375	.00100	....	....	
31,000	.00450	.00075	....	....	
66,400	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	66,400
Elastic limit per square inch of original section	do	24,000
Elongation per inch after rupture	inch	.1950
Elongation per inch under strain at elastic limit	do	.00090
Reduction in diameter at point of rupture	do	.065
Reduction in area after rupture, per cent of original section		23.9
Position of rupture		1″ from neck
Character of broken surface		granular 60 per cent, silky 40 per cent
Elongation of inch sections		″.22*, ″.17

No. 7204.

Marks, $\overset{\text{S 88}}{\text{P Y 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00030	.00015	....	....	
20,000	.00070	.00040	....	....	
25,000	.00090	.00020	....	....	
28,000	.00100	.00010	....	....	
29,000	.00105	.00005	....	....	
30,000	.00110	.00005	....	....	Elastic limit.
31,000	.00675	.00565	....	....	
32,000	.00800	.00125	....	....	
33,000	.00875	.00075	....	....	
34,000	.00950	.00075	....	....	
35,000	.01075	.00125	....	....	
63,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	63,900
Elastic limit per square inch of original section	do...	30,000
Elongation per inch after rupture	inch..	.0750
Elongation per inch under strain at elastic limit	do...	.00110
Reduction in diameter at point of rupture	do...	.025
Reduction in area after rupture, per cent of original section		9.5
Position of rupture		″.90 from neck
Character of broken surface		granular 85 per cent, silky 15 per cent
Elongation of inch sections		″.07, ″.08*

No. 7197.

Marks, $\overset{S\ 90}{P\ Y\ 15}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
30,000	.00110	.00050	....	....	
31,000	.00115	.00005	....	....	Elastic limit.
32,000	.00300	.00185	....	....	
33,000	.00765	.00465	....	....	
34,000	.00820	.00055	....	....	
35,000	.00940	.00120	....	....	
36,000	.01015	.00075	....	....	
65,850	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	65,850
Elastic limit per square inch of original section ....do...	31,000
Elongation per inch after rupture ....inch..	.0950
Elongation per inch under strain at elastic limit ....do...	.00115
Reduction in diameter at point of rupture ....do...	.035
Reduction in area after rupture, per cent of original section	13.2
Position of rupture	".20 from neck
Character of broken surface	dull silky 90 per cent, granular 10 per cent
Elongation of inch sections	".12*, ".07

No. 7198.

Marks, $\overset{S\ 91}{P\ Y\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00035	.00020	....	....	
20,000	.00070	.00035	....	....	
30,000	.00110	.00040	....	....	
31,000	.00115	.00005	....	....	Elastic limit.
32,000	.00850	.00735	....	....	
33,000	.00915	.00065	....	....	
34,000	.01000	.00085	....	....	
35,000	.01100	.00100	....	....	
36,000	.01175	.00075	....	....	
69,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	69,500
Elastic limit per square inch of original section ....do...	31,000
Elongation per inch after rupture ....inch..	.1450
Elongation per inch under strain at elastic limit ....do...	.00115
Reduction in diameter at point of rupture........do...	.045
Reduction in area after rupture, per cent of original section	16.9
Position of rupture	1″ from neck
Character of broken surface	granular, silky spot at circumference
Elongation of inch sections	″.15*, ″.14

No. 7199.

Marks, $\overset{\text{S 93}}{\text{P Y 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
28,000	.00095	.00035	....	....	
29,000	.00100	.00005	....	....	
30,000	.00100	0.	....	....	Elastic limit.
31,000	.00475	.00375	....	....	
32,000	.00675	.00200	....	....	
33,000	.00750	.00075	....	....	
34,000	.00815	.00065	....	....	
35,000	.00900	.00085	....	....	
72,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	72,500
Elastic limit per square inch of original section	do...	30,000
Elongation per inch after rupture	inch..	.1650
Elongation per inch under strain at elastic limit	do...	.00100
Reduction in diameter at point of rupture	do...	.045
Reduction in area after rupture, per cent of original section		16.9
Position of rupture		″.50 from neck
Character of broken surface		granular 85 per cent, silky 15 per cent
Elongation of inch sections		″.17, ″.16*.

No. 7200.

Marks, $\overset{S\ 94}{\text{P Y 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00030	.00015	....	....	
20,000	.00065	.00035	....	....	
30,000	.00110	.00045	....	....	
31,000	.00115	.00005	....	....	Elastic limit.
32,000	.00675	.00560	....	....	
33,000	.00750	.00075	....	....	
34,000	.00800	.00050	....	....	
35,000	.00900	.00100	....	....	
36,000	.01000	.00100	....	....	
73,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	73,900
Elastic limit per square inch of original section	do...	31,000
Elongation per inch after rupture	inch..	.1500
Elongation per inch under strain at elastic limit	do...	.00115
Reduction in diameter at point of rupture	do...	.045
Reduction in area after rupture, per cent of original section		16.9
Position of rupture		″.48 from neck
Character of broken surface		granular 90 per cent, silky 10 per cent
Elongation of inch sections		″.15*, ″.15

INNER BASES—15-POUNDER GUN MOUNTS.

STEEL CASTINGS.

No. 6447.

Marks, $\overset{A\ 26}{I\ B\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00025	.00015	....	....	
15,000	.00045	.00020	....	....	
20,000	.00055	.00010	....	....	
25,000	.00070	.00015	....	....	
30,000	.00095	.00025	....	....	
31,000	.00100	.00005	....	....	
32,000	.00100	0.	....	....	Elastic limit.
33,000	.01200	.01100	....	....	
34,000	.01350	.00150	....	....	
35,000	.01490	.00140	....	....	
36,000	.01625	00135	....	....	
37,000	.01755	.00130	....	....	
38,000	.01905	.00150	....	....	
39,000	.02085	.00180	....	....	
40,000	.02300	.00215	....	....	
64,050	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	64,050
Elastic limit per square inch of original section	do...	32,000
Elongation per inch after rupture	inch...	.2900
Elongation per inch under strain at elastic limit	do...	.00100
Reduction in diameter at point of rupture	do...	.135
Reduction in area after rupture, per cent of original section		46.2
Position of rupture		1″.2 from neck
Character of broken surface		silky
Elongation of inch sections		″.25, ″.33*

No. 6446.

Marks, $\overset{\text{A 27}}{\text{I B 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	....	....	
10,000	.00030	.00020	....	....	
15,000	.00050	.00020	....	....	
20,000	.00065	.00015	....	....	
25,000	.00085	.00020	....	....	Elastic limit.
26,000	.00105	.00020	....	....	
27,000	.00175	.00070	....	....	
28,000	.00460	.00285	....	....	
30,000	.00550	.00090	....	....	
31,000	.00655	.00105	....	....	
32,000	.00785	.00130	....	....	
33,000	.00895	.00110	....	....	
34,000	.01035	.00140	....	....	
35,000	.01195	.00160	....	....	
51,600	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	51,600
Elastic limit per square inch of original section	do...	25,000
Elongation per inch after rupture	inch..	.0650
Elongation per inch under strain at elastic limit	do...	.00085
Reduction in diameter at point of rupture	do...	.025
Reduction in area after rupture, per cent of original section		9.5
Position of rupture		at the neck
Character of broken surface		granular, spongy spot at the circumference
Elongation of inch sections		″.05, ″.08 *

No. 6448.

Marks, $\overset{\text{A 29}}{\text{I B 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
15,000	.00045	.00015	....	....	
20,000	.00060	.00015	....	....	
25,000	.00085	.00025	....	....	
28,000	.00100	.00015	....	....	
29,000	.00105	.00005	....	....	Elastic limit.
30,000	.00145	.00040	....	....	
31,000	.00195	.00050	....	....	
32,000	.00250	.00055	....	....	
33,000	.00800	.00550	....	....	
34,000	.01000	.00200	....	....	
35,000	.01100	.00100	....	....	
36,000	.01200	.00100	....	....	
37,000	.01315	.00115	....	....	
38,000	.01415	.00100	....	....	
39,000	.01560	.00145	....	....	
40,000	.01725	.00165	....	....	
67,050	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	67,050
Elastic limit per square inch of original section	do...	29,000
Elongation per inch after rupture	inch..	.2150
Elongation per inch under strain at elastic limit	do...	.00105
Reduction in diameter at point of rupture	do...	.085
Reduction in area after rupture, per cent of original section		80.7
Position of rupture		1″.09 from neck
Character of broken surface		dull amorphous
Elongation of inch sections		″.21,″.22*

No. 6976.

Marks, $\overset{\text{A 29}}{\text{31 B 15}}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00035	.00020	....	....	
20,000	.00070	.00035	....	....	
27,000	.00100	.00030	....	....	
28,000	.00105	.00005	....	....	Elastic limit.
29,000	.00130	.00025	....	....	
30,000	.00150	.00020	.00055	.00055	
31,000	.00700	.00550	....	....	
32,000	.00750	.00050	....	....	
33,000	.00900	.00150	....	....	
74,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	74,100
Elastic limit per square inch of original section	do...	28,000
Elongation per inch after rupture	inch..	.2100
Elongation per inch under strain at elastic limit	do...	.00105
Reduction in diameter at point of rupture	do...	.055
Reduction in area after rupture, per cent of original section		20.5
Position of rupture		1".17 from neck
Character of broken surface		dull silky 60 per cent, granular 40 per cent
Elongation of inch sections		".22*, ".20

No. 6449.

Marks, $\overset{A\ 30}{I\ B\ 15}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00005	.00005	0.	....	
10,000	.00020	.00015	....	....	
15,000	.00045	.00025	....	....	
20,000	.00060	.00015	....	....	
25,000	.00075	.00015	....	....	
30,000	.00100	.00025	....	....	
31,000	.00105	.00005	....	....	
32,000	.00110	.00005	....	....	
33,000	.00115	.00005	....	....	Elastic limit.
34,000	.01125	.01010	....	....	
35,000	.01195	.00070	....	....	
36,000	.01295	.00100	....	....	
37,000	.01425	.00130	....	....	
38,000	.01550	.00125	....	....	
39,000	.01650	.00100	....	....	
40,000	.01850	.00200	....	....	
41,000	.01975	.00125	....	....	
42,000	.02115	.00140	....	....	
43,000	.02285	.00170	....	....	
66,950	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	66,950
Elastic limit per square inch of original section....do...	33,000
Elongation per inch after rupture....inch..	.2350
Elongation per inch under strain at elastic limit....do...	.00115
Reduction in diameter at point of rupture....do...	.085
Reduction in area after rupture, per cent of original section....	30.7
Position of rupture....	".95 from neck
Character of broken surface....	silky
Elongation of inch sections....	".29*, ".18

No. 6450.

Marks, $^{A\ 31}_{I\ B\ 15}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
15,000	.00050	.00020	....	....	
18,000	.00065	.00015	....	....	
20,000	.00090	.00025	....	....	
21,000	.00100	.00010	....	....	Elastic limit.
22,000	.00210	.00110	....	....	
23,000	.00850	.00640	....	....	
24,000	.00935	.00085	....	....	
25,000	.01050	.00115	....	....	
26,000	.01225	.00175	....	....	
27,000	.01360	.00135	....	....	
28,000	.01550	.00190	....	....	
29,000	.01740	.00190	....	....	
30,000	.01975	.00235	....	....	
31,000	.02100	.00125	....	....	
52,850	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	52,850
Elastic limit per square inch of original section	do...	21,000
Elongation per inch after rupture	inch..	.3550
Elongation per inch under strain at elastic limit	do...	.00100
Reduction in diameter at point of rupture	do...	.185
Reduction in area after rupture, per cent of original section		59.8
Position of rupture		1".25 from neck
Character of broken surface		silky
Elongation of inch sections		".45*, ".26

No. 6475.

Marks, $\overset{\text{A 31}}{\text{2 I B 15}}$

Diameter, ".505.

Sectional area, .20 square inch.

Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
15,000	.00050	.00015	....	....	
20,000	.00065	.00015	....	....	
22,000	.00080	.00015	....	....	
23,000	.00090	.00010	....	....	
24,000	.00095	.00005	....	....	Elastic limit.
25,000	.01200	.00105	....	....	
26,000	.01300	.00100	....	....	
27,000	.01500	.00200	....	....	
28,000	.01625	.00125	....	....	
29,000	.01850	.00225	....	....	
30,000	.02025	.00175	....	....	
31,000	.02250	.00225	....	....	
32,000	.02450	.00200	....	....	
33,000	.02700	.00250	....	....	
52,450	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	52,450
Elastic limit per square inch of original section	do...	24,000
Elongation per inch after rupture	inch..	.3750
Elongation per inch under strain at elastic limit	do...	.00095
Reduction in diameter at point of rupture	do...	.205
Reduction in area after rupture, per cent of original section		64.6
Position of rupture		1" from neck
Character of broken surface		silky
Elongation of inch sections		".52*, ".23

No. 6517.

Marks, $\overset{A\ 31}{3\ I\ B\ 15}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".
Bruised specimen.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.		
10,000	.00035	.00025			
15,000	.00055	.00020			
18,000	.00065	.00010			
19,000	.00070	.00005			Elastic limit.
20,000	.00090	.00020	.00035	.00035	
21,000	.00135	.00045			
22,000	.00200	.00065			
23,000	.00275	.00075			
24,000	.00400	.00125			
25,000	.00500	.00100			
26,000	.01450	.00950			
27,000	.01650	.00200			
28,000	.01875	.00225			
48,550					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	48,550
Elastic limit per square inch of original section	do...	19,000
Elongation per inch after rupture	inch..	.1850
Elongation per inch under strain at elastic limit	do...	.00070
Reduction in diameter at point of rupture	do...	.095
Reduction in area after rupture, per cent of original section		34.0
Position of rupture		".70 from neck
Character of broken surface		dull amorphous, spongy
Elongation of inch sections		".13, ".24*

No. 6476.

Marks, $\overset{A\ 32}{I\ B\ 15}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00005	.00005	0.	....	
10,000	.00020	.00015	....	....	
15,000	.00045	.00025	....	....	
20,000	.00065	.00020	....	....	
21,000	.00075	.00010	....	....	
22,000	.00095	.00020	....	....	
23,000	.00105	.00010	....	....	Elastic limit.
24,000	.00200	.00095	....	....	
25,000	.00250	.00050	....	....	
26,000	.00350	.00100	....	....	
27,000	.00430	.00080	....	....	
28,000	.00520	.00090	....	....	
29,000	.00600	.00080	....	....	
30,000	.00675	.00075	....	....	
31,000	.00805	.00130	....	....	
32,000	.00910	.00105	....	....	
33,000	.01050	.00140	....	....	
68,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	63,900
Elastic limit per square inch of original section	do...	23,000
Elongation per inch after rupture	inch..	.2350
Elongation per inch under strain at elastic limit	do...	.00105
Reduction in diameter at point of rupture	do...	.095
Reduction in area after rupture, per cent of original section		34.0
Position of rupture		1".25 from neck
Character of broken surface		granular 70 per cent, silky 30 per cent
Elongation of inch sections		".20, ".27*

No. 6477.

Marks, $\overset{A\ 33}{I\ B\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00025	.00015	....	....	
15,000	.00045	.00020	....	....	
20,000	.00070	.00025	....	....	
21,000	.00085	.00015	....	....	
22,000	.00110	.00025	....	....	Elastic limit.
23,000	.00190	.00080	....	....	
24,000	.00260	.00070	....	....	
25,000	.00335	.00075	....	....	
26,000	.00420	.00085	....	....	
27,000	.00500	.00080	....	....	
28,000	.00620	.00120	....	....	
29,000	.00700	.00080	....	....	
30,000	.00805	.00105	....	....	
31,000	.00900	.00095	....	....	
62,450	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	62,450
Elastic limit per square inch of original section	do...	22,000
Elongation per inch after rupture	inch..	.2300
Elongation per inch under strain at elastic limit	do...	.00110
Reduction in diameter at point of rupture	do...	.095
Reduction in area after rupture, per cent of original section		34.0
Position of rupture		″.50 from neck
Character of broken surface		granular 60 per cent, silky 40 per cent
Elongation of inch sections		″.18, ″.28*

No. 6478.

Marks, $\overset{\text{A 34}}{\text{I B 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
15,000	.00055	.00025	....	....	
20,000	.00085	.00030	....	....	
21,000	.00095	.00010	....	....	
22,000	.00105	.00010	....	....	Elastic limit.
23,000	.00155	.00050	....	....	
24,000	.00180	.00025	....	....	
25,000	.00275	.00095	....	....	
26,000	.00390	.00115	....	....	
27,000	.00475	.00085	....	....	
28,000	.00560	.00085	....	....	
29,000	.00650	.00090	....	....	
30,000	.00750	.00100	....	....	
31,000	.00875	.00125	....	....	
32,000	.01000	.00125	....	....	
62,950	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	62,950
Elastic limit per square inch of original section	do...	22,000
Elongation per inch after rupture	inch..	.2450
Elongation per inch under strain at elastic limit	do...	.00105
Reduction in diameter at point of rupture	do...	.075
Reduction in area after rupture, per cent of original section		27.4
Position of rupture		″.50 from neck
Character of broken surface		granular, dull spot at circumference
Elongation of inch sections		″.21, ″.28*

No. 6479.

Marks, $\overset{\text{A 35}}{\text{I B 15}}$

Diameter, ″.505.

Sectional area, .20 square inch.

Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
15,000	.00050	.00020	....	....	
20,000	.00075	.00025	....	....	
21,000	.00090	.00015	....	....	
22,000	.00100	.00010	....	....	Elastic limit.
23,000	.00155	.00055	....	....	
24,000	.00215	.00060	....	....	
25,000	.00305	.00090	....	....	
26,000	.00360	.00055	....	....	
27,000	.00450	.00090	....	....	
28,000	.00550	.00100	....	....	
29,000	.00625	.00075	....	....	
30,000	.00750	.00125	....	....	
31,000	.00875	.00125	....	....	
32,000	.00950	.00075	....	....	
64,450	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	64,450
Elastic limit per square inch of original section	do...	22,000
Elongation per inch after rupture	inch..	.2100
Elongation per inch under strain at elastic limit	do...	.00100
Reduction in diameter at point of rupture	do...	.065
Reduction in area after rupture, per cent of original section		23.9
Position of rupture		″.55 from neck
Character of broken surface		granular 90 per cent, silky 10 per cent
Elongation of inch sections		″.22*, ″.20

No. 6737.

Marks, $\overset{A\ 36}{I\ B\ 15}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00005	.00005	0.	....	
10,000	.00020	.00015	....	....	
20,000	.00055	.00035	....	....	
30,000	.00100	.00045	....	....	Elastic limit.
	.00635	.00535	....	....	
31,000	.00710	.00075	....	....	
32,000	.00765	.00055	....	....	
33,000	.00870	.00105	....	....	
34,000	.00955	.00085	....	....	
35,000	.01100	.00145	....	....	
70,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	70,500
Elastic limit per square inch of original section ....do...	30,000
Elongation per inch after rupture ....inch..	.2200
Elongation per inch under strain at elastic limit ....do...	.00100
Reduction in diameter at point of rupture ....do...	.075
Reduction in area after rupture, per cent of original section	27.4
Position of rupture	1" from neck
Character of broken surface	granular, dull silky spot at the circumference
Elongation of inch sections	".25*, ".19

No. 6738.

Marks, $\overset{\text{A 87}}{\text{I B 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00005	.00005	0.	....	
10,000	.00030	.00025	....	....	
20,000	.00060	.00030	....	....	
25,000	.00095	.00035	....	....	Elastic limit.
26,000	.00140	.00045	....	....	
27,000	.00410	.00270	....	....	
28,000	.01010	.00600	....	....	
29,000	.01050	.00040	....	....	
30,000	.01150	.00100	....	....	
62,600	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section.....pounds..	62,600
Elastic limit per square inch of original section.....do...	25,000
Elongation per inch after rupture.....inch..	.2900
Elongation per inch under strain at elastic limit.....do...	.00095
Reduction in diameter at point of rupture.....do...	.105
Reduction in area after rupture, per cent of original section.....	37.1
Position of rupture.....	1″.2 from neck
Character of broken surface.....	silky
Elongation of inch sections.....	″.26, ″.32*

No. 6739.

Marks, $\overset{A\ 38}{I\ B\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00005	.00005	0.	....	
10,000	.00025	.00020	....	....	
20,000	.00060	.00035	....	....	
30,000	.00110	.00050	....	....	Elastic limit.
31,000	.00595	.00485	....	....	
32,000	.00975	.00380	....	....	
33,000	.01050	.00075	....	....	
34,000	.01105	.00055	....	....	
35,000	.01205	.00100	....	....	
67,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section..........pounds..	67,500
Elastic limit per square inch of original section..........do...	30,000
Elongation per inch after rupture..........inch..	.2500
Elongation per inch under strain at elastic limit..........do...	.00110
Reduction in diameter at point of rupture..........do...	.085
Reduction in area after rupture, per cent of original section..........	30.7
Position of rupture..........	1″.1 from neck
Character of broken surface..........	silky, trace of granulation
Elongation of inch sections..........	″.23, ″.27*

No. 6740.

Marks, $\overset{A\ 39}{I\ B\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00005	.00005	0.	....	
10,000	.00035	.00030	....	....	
18,000	.00055	.00020	....	....	
19,000	.00065	.00010	....	....	Elastic limit.
20,000	.00150	.00085	....	....	
21,000	.00240	.00090	....	....	
22,000	.00360	.00120	....	....	
23,000	.00450	.00090	....	....	
24,000	.00575	.00125	....	....	
57,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	57,500
Elastic limit per square inch of original section	do	19,000
Elongation per inch after rupture	inch	.2650
Elongation per inch under strain at elastic limit	do	.00065
Reduction in diameter at point of rupture	do	.085
Reduction in area after rupture, per cent of original section		30.7
Position of rupture		″.55 from neck
Character of broken surface		granular 60 per cent, dull amorphous 40 per cent
Elongation of inch sections		″.31*, ″.22

No. 6922.

Marks, $\overset{\text{A 39}}{\text{2 I B 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.		
10,000	.00035	.00025			
20,000	.00065	.00030			
30,000	.00100	.00035			
40,000	.00140	.00040			
46,000	.00175	.00035			
47,000	.00180 .02335	.00005 .02155			Elastic limit.
48,000	.02425	.00090			
49,000	.02575	.00150			
50,000	.02765	.00190			
51,000	.03050	.00285			
52,000	.03165	.00115			
70,500					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	70,500
Elastic limit per square inch of original section	do	47,000
Elongation per inch after rupture	inch	.1600
Elongation per inch under strain at elastic limit	do	.00180
Reduction in diameter at point of rupture	do	.055
Reduction in area after rupture, per cent of original section		20.5
Position of rupture		at middle of stem
Character of broken surface		dull gray, amorphous
Elongation of inch sections		″.17*, ″.15*

No. 6802.

Marks, $\substack{A\ 40\\ I\ B\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	
24,000	.00090	.00025	....	....	Elastic limit.
25,000	.00125	.00035	....	....	
26,000	.00200	.00075	....	....	
27,000	.00400	.00200	....	....	
28,000	.00535	.00135	....	....	
29,000	.00665	.00130	....	....	
64,350	....	....	....	....	Tensile strength.

Geeneral summary.

Tensile strength per square inch of original section	pounds..	64,850
Elastic limit per square inch of original section	do...	24,000
Elongation per inch after rupture	inch...	.2050
Elongation per inch under strain at elastic limit	do...	.00090
Reduction in diameter at point of rupture	do...	.065
Reduction in area after rupture, per cent of original section		23.9
Position of rupture		″.8 from neck
Character of broken surface		granular
Elongation of inch sections		″.18, ″.23*

No. 6849.

Marks, $\overset{A\ 41}{I\ B\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00070	.00035	....	....	
28,000	.00100	.00030	....	....	
29,000	.00100	0.	....	....	Elastic limit.
30,000	.00140	.00040	....	....	
31,000	.00205	.00065	....	....	
32,000	.00750	.00545	....	....	
33,000	.00825	.00075	....	....	
34,000	.00900	.00075	....	....	
69,050	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	69,050
Elastic limit per square inch of original section	do...	29,000
Elongation per inch after rupture	inch..	.1800
Elongation per inch under strain at elastic limit	do...	.00100
Reduction in diameter at point of rupture	do...	.055
Reduction in area after rupture, per cent of original section		20.5
Position of rupture		″.30 from neck
Character of broken surface		granular 55 per cent, dull silky 45 per cent
Elongation of inch sections		″.16, ″.20

No. 6741.

Marks, $\overset{A\ 42}{I\ B\ 15}$

Diameter, ".505.

Sectional area, .20 square inch.

Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00005	.00005	....	....	
10,000	.00030	.00025	....	....	
20,000	.00060	.00030	....	....	
22,000	.00065	.00005	....	....	Elastic limit.
23,000	.00085	.00020	....	....	
24,000	.00100	.00015	....	....	
25,000	.00125	.00025	....	....	
26,000	.00155	.00030	....	....	
27,000	.00205	.00050	....	....	
28,000	.00300	.00095	....	....	
66,200	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	**pounds..**	**66,200**
Elastic limit per square inch of original section	**do...**	**22,000**
Elongation per inch after rupture	**inch..**	**.2050**
Elongation per inch under strain at elastic limit	**do...**	**.00065**
Reduction in diameter at point of rupture	**do...**	**.075**
Reduction in area after rupture, per cent of original section		**27.4**
Position of rupture		**".75 from neck**
Character of broken surface		**granular 50 per cent, dull amorphous 50 per cent**
Elongation of inch sections		**".17, ".27***

No. 6637.

Marks, $\overset{\text{A 43}}{\text{I B 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
15,000	.00050	.00020	....	....	
20,000	.00070	.00020	....	....	
23,000	.00075	.00005	....	....	
24,000	.00080	.00005	....	....	Elastic limit.
25,000	.00100	.00020	....	....	
26,000	.00115	.00015	....	....	
27,000	.00145	.00030	....	....	
28,000	.00195	.00050	....	....	
29,000	.00235	.00040	....	....	
30,000	.00310	.00075	....	....	
68,700	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	68,700
Elastic limit per square inch of original section ....do...	24,000
Elongation per inch after rupture ....inch..	.1800
Elongation per inch under strain at elastic limit ....do...	.00080
Reduction in diameter at point of rupture ....do...	.055
Reduction in area after rupture, per cent of original section	20.5
Position of rupture	1″.1 from neck
Character of broken surface	granular 60 per cent, dull amorphous 40 per cent
Elongation of inch sections	″.19*,″.17

No. 6717.

Marks, $\substack{A\ 43\\ I\ B\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00040	.00030	....	....	
20,000	.00060	.00020	....	....	
25,000	.00075	.00015	....	....	
26,000	.00085	.00010	....	....	
27,000	.00090	.00005	....	....	Elastic limit.
28,000	.00150	.00060	....	....	
29,000	.00325	.00175	....	....	
30,000	.00415	.00090	....	....	
31,000	.00460	.00045	....	....	
32,000	.00550	.00090	....	....	
67,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	67,900
Elastic limit per square inch of original section ....do...	27,000
Elongation per inch after rupture ....inch..	.1650
Elongation per inch under strain at elastic limit ....do..	.00090
Reduction in diameter at point of rupture ....do..	.045
Reduction in area after rupture, per cent of original section	16.9
Position of rupture	at middle of stem
Character of broken surface	granular 60 per cent, dull silky 40 per cent
Elongation of inch sections	″.18*, ″.15*

No. 6638.

Marks, $\frac{A\ 44}{I\ B\ 15}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00025	.00015	....	....	
15,000	.00040	.00015	....	....	
20,000	.00060	.00020	....	....	
25,000	.00075	.00015	....	....	
28,000	.00095	.00020	....	....	Elastic limit.
29,000	.00125	.00030	....	....	
30,000	.00200	.00075	....	....	
31,000	.00255	.00055	....	....	
32,000	.00345	.00090	....	....	
33,000	.00450	.00105	....	....	
72,600	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	72,600
Elastic limit per square inch of original section ....do...	28,000
Elongation per inch after rupture ....inch..	.1850
Elongation per inch under strain at elastic limit ....do...	.00095
Reduction in diameter at point of rupture ....do...	.065
Reduction in area after rupture, per cent of original section........	20.5
Position of rupture........	".95 from neck
Character of broken surface	granular 80 per cent, dull amorphous 20 per cent
Elongation of inch sections	".22*, ".15

No. 6639.

Marks, $\overset{A\ 45}{I\ B\ 15}$

Diameter, ″.505.

Sectional area, .20 square inch.

Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
15,000	.00050	.00020	....	....	
20,000	.00070	.00020	....	....	
25,000	.00090	.00020	....	....	
30,000	.00110	.00020	....	....	Elastic limit.
31,000	.00120	.00010	....	....	
32,000	.00140	.00020	....	....	
33,000	.01100	.00960	....	....	
34,000	.01225	.00125	....	....	
35,000	.01300	.00075	....	....	
66,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	66,000
Elastic limit per square inch of original section....................do...	30,000
Elongation per inch after rupture ....inch..	.1500
Elongation per inch under strain at elastic limit ....do...	.00110
Reduction in diameter at point of rupture....................do...	.045
Reduction in area after rupture, per cent of original section....................	16.9
Position of rupture....................	″.35 from neck
Character of broken surface....................	dull amorphous, trace of granulation
Elongation of inch sections....................	″.17*, ″.13

No. 6718.

Marks, $\overset{\text{A 45}}{\text{I B 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00005	.00005			
10,000	.00025	.00020			
20,000	.00060	.00035			
30,000	.00090	.00030			
32,000	.00100	.00010			
33,000	.00105	.00005			Elastic limit.
34,000	.01200	.01095			
35,000	.01350	.00150			
36,000	.01550	.00200			
37,000	.01625	.00075			
38,000	.01810	.00185			
65,600					Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	65,600
Elastic limit per square inch of original section ....do...	33,000
Elongation per inch after rupture ....inch..	.1533
Elongation per inch under strain at elastic limit ....do...	.00105
Reduction in diameter at point of rupture....do...	.065
Reduction in area after rupture, per cent of original section....	23.9
Position of rupture....	″.75 from neck
Character of broken surface....	dull amorphous
Elongation of inch sections	″.20, ″.26*

No. 6780.

Marks, $^{A\ 46}_{I\ B\ 15}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.		
10,000	.00030	.00020			
20,000	.00055	.00025			
30,000	.00100	.00045			
32,000	.00115	.00015			
33,000	.00120	.00005			Elastic limit.
34,000	.00250	.00130			
35,000	.01600	.01350			
36,000	.01650	.00050			
37,000	.01710	.00060			
38,000	.01975	.00265			
65,600					Tensile strength.

General summary.

Tensile strength per square inch of original section .... pounds..	65,600
Elastic limit per square inch of original section .... do...	33,000
Elongation per inch after rupture .... inch..	.2300
Elongation per inch under strain at elastic limit .... do...	.00120
Reduction in diameter at point of rupture .... do...	.075
Reduction in area after rupture, per cent of original section	27.4
Position of rupture	".35 from neck
Character of broken surface	silky
Elongation of inch sections	".25*, ".21

No. 6742.

Marks, $\overset{A\ 47}{1\ B\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2.″

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00005	.00005	0.		
10,000	.00035	.00030			
20,000	.00065	.00030			
25,000	.00090	.00025			Elastic limit.
26,000	.00105	.00015			
	.01810	.01705			
27,000	.02090	.00280			
28,000	.02250	.00160			
29,000	.02450	.00200			
30,000	.02750	.00300			
50,100					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	50,100
Elastic limit per square inch of original section	do	25,000
Elongation per inch after rupture	inch	.3950
Elongation per inch under strain at elastic limit	do	.00090
Reduction in diameter at point of rupture	do	.215
Reduction in area after rupture, per cent of original section		66.9
Position of rupture		1″ from neck
Character of broken surface		silky, cup shaped
Elongation of inch sections		″.28, ″.51*

No. 6766.

Marks, $\overset{A\ 47}{I\ B\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	....	....	
10,000	.00040	.00030	....	....	
20,000	.00085	.00045	.00005	.00005	
25,000	.00100	.00015	....	....	Elastic limit.
26,000	.01800	.01700	....	....	
27,000	.02050	.00250	....	....	
28,000	.02250	.00200	....	....	
29,000	.02550	.00300	....	....	
30,000	.02925	.00375	....	....	
49,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	49,100
Elastic limit per square inch of original section ....do...	25,000
Elongation per inch after rupture ....inch..	.4100
Elongation per inch under strain at elastic limit ....do...	.00100
Reduction in diameter at point of rupture............do...	.225
Reduction in area after rupture, per cent of original section	69.2
Position of rupture	1″.2 from neck
Character of broken surface	silky, cup shaped
Elongation of inch sections	″.52*, ″.30

No. 6980.

Marks, $\overset{A\,47}{2\,I\,B\,15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
28,000	.00100	.00040	....	....	Elastic limit.
29,000	.00500	.00400	....	....	
30,000	.00625	.00125	....	....	
31,000	.00725	.00100	....	....	
32,000	.00810	.00085	....	....	
33,000	.00900	.00090	....	....	
70,050	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	70,050
Elastic limit per square inch of original section ....do...	28,000
Elongation per inch after rupture....................inch..	.2300
Elongation per inch under strain at elastic limit....................do...	.00100
Reduction in diameter at point of rupture....................do...	.075
Reduction in area after rupture, per cent of original section....................	27.4
Position of rupture....................	1″.14 from neck.
Character of broken surface....................	granular, silky spot at the circumference
Elongation of inch sections....................	″.25*, ″.21

No. 6803.

Marks, $\overset{A\,48}{I\,B\,15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00060	.00025	....	....	
28,000	.00095	.00035	....	....	
29,000	.00100	.00005	....	....	Elastic limit.
30,000	.00145	.00045	....	....	
31,000	.00175	.00030	....	....	
32,000	.00290	.00115	....	....	
33,000	.00325	.00035	....	....	
34,000	.00400	.00075	....	....	
79,150	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	79,150
Elastic limit per square inch of original section	do...	29,000
Elongation per inch after rupture	inch..	.1900
Elongation per inch under strain at elastic limit	do...	.00100
Reduction in diameter at point of rupture	do...	.065
Reduction in area after rupture, per cent of original section		23.9
Position of rupture		″.8 from neck
Character of broken surface		granular
Elongation of inch sections		″.17, ″.21*

No. 6823.

Marks, $^{\text{A }49}_{\text{I B }15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00030	.00015	....	....	
15,000	.00050	.00020	....	....	
17,000	.00055	.00005	....	....	
18,000	.00065	.00010	....	....	
19,000	.00075	.00010	....	....	Elastic limit.
20,000	.00100	.00025	....	....	
21,000	.00550	.00450	....	....	
22,000	.00890	.00340	....	....	
23,000	.01025	.00135	....	....	
24,000	.01200	.00175	....	....	
25,000	.01350	.00150	....	....	
26,000	.01500	.00150	....	....	
27,000	.01710	.00210	....	....	
51,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	51,500
Elastic limit per square inch of original section	do...	19,000
Elongation per inch after rupture	inch..	.3660
Elongation per inch under strain at elastic limit	do...	.00075
Reduction in diameter at point of rupture	do...	.185
Reduction in area after rupture, per cent of original section		59.8
Position of rupture		″.90 from neck
Character of broken surface		dull silky
Elongation of inch sections		″.25, ″.48*

No. 6981.

Marks, $\overset{\text{A 49}}{\text{2 I B 15}}$

Diameter, ".505.

Sectional area, .20 square inch.

Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	Elastic limit.
21,000	.00100	.00035	....	....	
22,000	.00130	.00030	....	....	
23,000	.00195	.00065	....	....	
24,000	.00240	.00045	....	....	
25,000	.00300	.00060	....	....	
26,000	.00405	.00105	....	....	
27,000	.00465	.00060	....	....	
28,000	.00595	.00130	....	....	
60,800	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	60,800
Elastic limit per square inch of original section ....do...	20,000
Elongation per inch after rupture ....inch..	.2300
Elongation per inch under strain at elastic limit ....do...	.00065
Reduction in diameter at point of rupture............do...	.085
Reduction in area after rupture, per cent of original section	30.7
Position of rupture	".85 from neck
Character of broken surface............	dull amorphous, trace of granulation
Elongation of inch sections............	".18, ".28*

No. 7088.

Marks, $\overset{\text{A 49}}{\text{3 I B 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00025	.00015	....	....	
20,000	.00055	.00030	....	....	
30,000	.00095	.00040	....	....	
37,000	.00130	.00035	....	....	
38,000	.00135	.00005	....	....	Elastic limit.
39,000	.00800	.00665	....	....	
40,000	.00900	.00100	....	....	
41,000	.00930	.00030	....	....	
42,000	.01000	.00070	....	....	
43,000	.01060	.00060	....	....	
84,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	84,000
Elastic limit per square inch of original section	do	38,000
Elongation per inch after rupture	inch	.1600
Elongation per inch under strain at elastic limit	do	.00135
Reduction in diameter at point of rupture	do	.045
Reduction in area after rupture, per cent of original section		16.9
Position of rupture		″.95 from neck
Character of broken surface		granular, silky spot at the circumference
Elongation of inch sections		″.14, ″.18*

No. 6824.

Marks, $\genfrac{}{}{0pt}{}{\text{A 50}}{\text{I B 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00025	.00015	....	....	
15,000	.00055	.00030	....	....	Elastic limit.
16,000	.00115	.00060	....	....	
17,000	.00150	.00035	....	....	
18,000	.00250	.00100	....	....	
19,000	.00455	.00205	....	....	
20,000	.00610	.00155	....	....	
21,000	.00760	.00150	....	....	
22,000	.00950	.00190	....	....	
23,000	.01060	.00110	....	....	
24,000	.01200	.00140	....	....	
25,000	.01400	.00200	....	....	
51,550	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	51,550
Elastic limit per square inch of original section	do...	15,000
Elongation per inch after rupture	inch..	.3650
Elongation per inch under strain at elastic limit	do...	.00055
Reduction in diameter at point of rupture	do...	.165
Reduction in area after rupture, per cent of original section		54.6
Position of rupture		1″.18 from neck
Character of broken surface		silky, trace of granulation
Elongation of inch sections		″.43*, ″.30

No. 7004.

Marks, $\overset{\text{A 50}}{\text{2 I B 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	.0	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	
30,000	.00100	.00035	....	....	
33,000	.00115	.00015	....	....	Elastic limit.
34,000	.00145	.00030	....	....	
35,000	.00640	.00495	....	....	
36,000	.00700	.00060	....	....	
37,000	.00765	.00065	....	....	
38,000	.00850	.00085	....	....	
38,450	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	38,450
Elastic limit per square inch of original section	do...	33,000
Elongation per inch after rupture	inch..	.2050
Elongation per inch under strain at elastic limit	do...	.00115
Reduction in diameter at point of rupture	do...	.055
Reduction in area after rupture, per cent of original section		20.5
Position of rupture		″.7 from neck
Character of broken surface		granular, silky spot at the circumference
Elongation of inch sections		″.23*, ″,18

No. 6825.

Marks, $\overset{A\ 51}{I\ B\ 15}$

Diameter, ".505.

Sectional area, .20 square inch.

Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00025	.00015	....	....	
20,000	.00060	.00035	....	....	
30,000	.00100	.00040	....	....	
32.000	.00110	.00010	....	....	
33,000	.00115	.00005	....	....	
34,000	.00120	.00005	....	....	Elastic limit.
35,000	.00990	.00870	....	....	
36,000	.01080	.00090	....	....	
37,000	.01125	.00045	....	....	
38,000	.01230	.00105	....	....	
39,000	.01300	.00070	....	....	
40,000	.01485	.00185	....	....	
73,950	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	73,950
Elastic limit per square inch of original section	do...	34,000
Elongation per inch after rupture	inch..	.2250
Elongation per inch under strain at elastic limit	do...	.00120
Reduction in diameter at point of rupture	do...	.065
Reduction in area after rupture, per cent of original section		23.9
Position of rupture		1".05 from neck
Character of broken surface		granular, dull silky spot at the circumference
Elongation of inch sections		".23,".22*

No. 6826.

Marks, $\overset{\text{A 52}}{\text{I B 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.		
10,000	.00030	.00020			
20,000	.00065	.00035			
25,000	.00090	.00025			
26,000	.00095	.00005			Elastic limit.
27,000	.00350	.00255			
28,000	.00675	.00325			
29,000	.00750	.00075			
30,000	.00825	.00075			
31,000	.00925	.00100			
32,000	.01025	.00100			
33,000	.01110	.00085			
34,000	.01200	.00090			
35,000	.01310	.00110			
68,500					Tensile strength.

General summary.

Tensile strength per square inch of original section ......pounds..	68,500
Elastic limit per square inch of original section ......do...	26,000
Elongation per inch after rupture ......inch..	.2250
Elongation per inch under strain at elastic limit ......do...	.00095
Reduction in diameter at point of rupture ......do...	.055
Reduction in area after rupture, per cent of original section	20.5
Position of rupture	1″.23 from neck
Character of broken surface	granular, dull silky spot at the circumference
Elongation of inch sections	″.20, ″.25*

No. 6827^{b}.

Marks, $\overset{A\ 53}{I\ B\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00065	.00035	....	....	
30,000	.00100	.00035	....	....	
31,000	.00110	.00010	....	....	
32,000	.00115	.00005	....	....	Elastic limit.
33,000	.01110	.00995	....	....	
34,000	.01175	.00065	....	....	
35,000	.01225	.00050	....	....	
36,000	.01325	.00100	....	....	
37,000	.01425	.00100	....	....	
38,000	.01575	.00150	....	....	
39,000	.01700	.00125	....	....	
40,000	.01800	.00100	....	....	
69,050	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	69,050
Elastic limit per square inch of original section	do...	32,000
Elongation per inch after rupture	inch..	.3000
Elongation per inch under strain at elastic limit	do...	.00115
Reduction in diameter at point of rupture	do...	.115
Reduction in area after rupture, per cent of original section		40.3
Position of rupture		1″.05 from neck
Character of broken surface		silky, trace of granulation
Elongation of inch sections		″.26, ″.34*

No. 6828.

Marks, $\overset{A\ 54}{I\ B\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00025	.00010	....	....	
15,000	.00045	.00020	....	....	
16,000	.00050	.00005	....	....	
17,000	.00060	.00010	....	....	Elastic limit.
18,000	.00165	.00105	....	....	
19,000	.00260	.00095	....	....	
20,000	.00390	.00130	....	....	
21,000	.00500	.00110	....	....	
22,000	.00645	.00145	....	....	
23,000	.00750	.00105	....	....	
24,000	.00900	.00150	....	....	
25,000	.01025	.00125	....	....	
54,600	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	54,600
Elastic limit per square inch of original section	do...	17,000
Elongation per inch after rupture	inch..	.3400
Elongation per inch under strain at elastic limit	do...	.00060
Reduction in diameter at point of rupture	do...	.145
Reduction in area after rupture, per cent of original section		49.1
Position of rupture		1″.18 from neck
Character of broken surface		silky, trace of granulation
Elongation of inch sections		″.39*, ″.29

No. 6982.

Marks, $\overset{A\ 54}{I\ B\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
29,000	.00095	.00035	....	....	Elastic limit.
30,000	.00115	.00020	....	....	
31,000	.00790	.00675	....	....	
32,000	.00830	.00040	....	....	
33,000	.00915	.00085	....	....	
34,000	.00990	.00075	....	....	
69,050	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	69,050
Elastic limit per square inch of original section	do...	29,000
Elongation per inch after rupture	inch..	.2000
Elongation per inch under strain at elastic limit	do...	.00095
Reduction in diameter at point of rupture	do...	.065
Reduction in area after rupture, per cent of original section		23.9
Position of rupture		″.9 from neck
Character of broken surface		granular, silky spot at the circumference
Elongation of inch sections		″.21*, ″.19

No. 6829.

Marks, $^{A\ 55}_{I\ B\ 15}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00035	.00020	....	....	
20,000	.00070	.00035	....	....	
25,000	.00095	.00025	....	....	
26,000	.00100	.00005	....	....	
27,000	.00105	.00005	....	....	
28,000	.00110	.00005	....	....	
29,000	.00120	.00010	....	....	Elastic limit.
30,000	.01050	.00030	....	....	
31,000	.01140	.00090	....	....	
32,000	.01225	.00085	....	....	
33,000	.01255	.00030	....	....	
34,000	.01285	.00030	....	....	
35,000	.01425	.00140	....	....	
36,000	.01550	.00125	....	....	
66,050	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	66,050
Elastic limit per square inch of original section........do...	29,000
Elongation per inch after rupture........inch..	.2650
Elongation per inch under strain at elastic limit........do...	.00120
Reduction in diameter at point of rupture ....do...	.085
Reduction in area after rupture, per cent of original section........	80.7
Position of rupture	".65 from neck
Character of broken surface........	granular 60 per cent, silky 40 per cent
Elongation of inch sections	".33*, ".20

No. 6830.

Marks, $\overset{\text{A 56}}{\text{I B 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00035	.00020	....	....	
20,000	.00075	.00040	....	....	
22,000	.00090	.00015	....	....	
23,000	.00100	.00010	....	....	
24,000	.00105	.00005	....	....	Elastic limit.
25,000	.00195	.00090	....	....	
26,000	.00575	.00380	....	....	
27,000	.00700	.00125	....	....	
28,000	.00760	.00060	....	....	
29,000	.00875	.00115	....	....	
30,000	.01000	.00125	....	....	
31,000	.01075	.00075	....	....	
32,000	.01150	.00075	....	....	
63,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	63,900
Elastic limit per square inch of original section ....do...	24,000
Elongation per inch after rupture........inch..	.1500
Elongation per inch under strain at elastic limit ....do...	.00105
Reduction in diameter at point of rupture........do...	.045
Reduction in area after rupture, per cent of original section........	16.9
Position of rupture	″.45 from neck
Character of broken surface	granular, silky spot at the circumference
Elongation of inch sections	″.17*, ″.13

No. 6926.

Marks, $\overset{\text{A 56}}{\text{2 I B 15}}$

Diameter, ″.505.

Sectional area, .20 square inch.

Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00005	.00005	0.	....	
10,000	.00030	.00025	....	....	
20,000	.00055	.00025	....	....	
30,000	.00095	.00040	....	....	
33,000	.00105	.00010	....	....	Elastic limit.
34,000	.01300	.01195	....	....	
35,000	.01425	.00125	....	....	
36,000	.01550	.00125	....	....	
37,000	.01650	.00100	....	....	
38,000	.01800	.00150	....	....	
68,200	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	68,200
Elastic limit per square inch of original section	do	33,000
Elongation per inch after rupture	inch	.2750
Elongation per inch under strain at elastic limit	do	.00105
Reduction in diameter at point of rupture	do	.095
Reduction in area after rupture, per cent of original section		34.0
Position of rupture		1″.15 from neck
Character of broken surface		granular 30 per cent, dull gray amorphous 70 per cent
Elongation of inch sections		″.25, ″.30*

No. 6979.

Marks, $\overset{A\ 56}{2\ I\ B\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	
30,000	.00100	.00035	....	....	
31,000	.00105	.00005	....	....	Elastic limit.
32,000	.00300	.00195	....	....	
33,000	.00840	.00540	....	....	
34,000	.00915	.00075	....	....	
35,000	.01000	.00085	....	....	
36,000	.01060	.00060	....	....	
74,200	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	74,200
Elastic limit per square inch of original section	do...	31,000
Elongation per inch after rupture	inch..	.1900
Elongation per inch under strain at elastic limit	do...	.00105
Reduction in diameter at point of rupture	do...	.055
Reduction in area after rupture, per cent of original section		20.5
Position of rupture		″.45 from neck
Character of broken surface		granular, silky spot at circumference
Elongation of inch sections		″.17, ″.21*

No. 6831.

Marks, $\overset{\text{A 57}}{\text{I B 15}}$

Diameter, ″.505.

Sectional area, .20 square inch.

Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.		
10,000	.00025	.00010			
20,000	.00065	.00040			
21,000	.00080	.00015			
22,000	.00095	.00015			Elastic limit.
23,000	.00225	.00130			
24,000	.00400	.00175			
25,000	.00525	.00125			
26,000	.00600	.00075			
27,000	.00710	.00110			
28,000	.00840	.00130			
29,000	.00950	.00110			
30,000	.01050	.00100			
68,450					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	68,450
Elastic limit per square inch of original section	do	22,000
Elongation per inch after rupture	inch	.2750
Elongation per inch under strain at elastic limit	do	.00095
Reduction in diameter at point of rupture	do	.085
Reduction in area after rupture, per cent of original section		80.7
Position of rupture		″.62 from neck
Character of broken surface		granular 80 per cent, silky 20 per cent
Elongation of inch sections		″.23, ″.32

No. 7011.

Marks, $\overset{A\ 57}{2\ I\ B\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00035	.00020	....	....	
20,000	.00070	.00035	....	....	
22,000	.00090	.00020	....	....	
24,000	.00105	.00015	....	....	Elastic limit.
25,000	.00135	.00030	....	....	
26,000	.00175	.00040	....	....	
27,000	.00225	.00050	....	....	
28,000	.00310	.00085	....	....	
29,000	.00405	.00095	....	....	
30,000	.00445	.00040	....	....	
31,000	.00530	.00085	....	....	
32,000	.00600	.00070	....	....	
71,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	71,500
Elastic limit per square inch of original section	do...	24,000
Elongation per inch after rupture	inch..	.1850
Elongation per inch under strain at elastic limit	do...	.00105
Reduction in diameter at point of rupture	do...	.065
Reduction in area after rupture, per cent of original section		23.9
Position of rupture		1″ from neck
Character of broken surface		granular, silky spot at the circumference
Elongation of inch sections		″.18*, ″.19

No. 6908.

Marks, $\overset{A\ 58}{I\ B\ 15}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00015	....	....	
20,000	.00060	.00025	....	....	
28,000	.00100	.00040	....	....	
29,000	.00105	.00005	....	....	Elastic limit.
30,000	.00360	.00255	....	....	
31,000	.00650	.00290	....	....	
32,000	.00700	.00050	....	....	
33,000	.00800	.00100	....	....	
34,000	.00900	.00100	....	....	
70,600	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	70,600
Elastic limit per square inch of original section ....do...	29,000
Elongation per inch after rupture ....inch..	.0950
Elongation per inch under strain at elastic limit ....do...	.00105
Reduction in diameter at point of rupture ....do...	.015
Reduction in area after rupture, per cent of original section	5.7
Position of rupture........	at the neck
Character of broken surface........	granular, dull flaky spot at the circumference
Elongation of inch sections........	".10, ".09

No. 6932.

Marks, $\overset{A\ 58}{2\ I\ B\ 15}$

Diameter, ″.505.

Sectional area, .20 square inch.

Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00060	.00025	....	....	
29,000	.00100	.00040	....	....	Elastic limit.
30,000	.00725	.00625	....	....	
31,000	.00800	.00075	....	....	
32,000	.00865	.00065	....	....	
33,000	.00960	.00095	....	....	
34,000	.01050	.00090	....	....	
72,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	72,500
Elastic limit per square inch of original section	do	29,000
Elongation per inch after rupture	inch	.2000
Elongation per inch under strain at elastic limit	do	.00100
Reduction in diameter at point of rupture	do	.055
Reduction in area after rupture, per cent of original section		20.5
Position of rupture		″.75 from neck
Character of broken surface		granular, silky spot at the circumference
Elongation of inch sections		″.22*, ″.18

No. 6909.

Marks, $\overset{A\ 59}{I\ B\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	
23,000	.00085	.00020	....	....	Elastic limit.
24,000	.00115	.00030	....	....	
25,000	.00340	.00225	....	....	
26,000	.00450	.00110	....	....	
27,000	.00535	.00085	....	....	
28,000	.00620	.00085	....	....	
29,000	.00750	.00130	....	....	
55,200	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	55,200
Elastic limit per square inch of original section	do...	23,000
Elongation per inch after rupture	inch..	.0750
Elongation per inch under strain at elastic limit	do...	.00085
Reduction in diameter at point of rupture	do...	.025
Reduction in area after rupture, per cent of original section		9.5
Position of rupture		1.″ from neck
Character of broken surface		coarse granular and flaky metal
Elongation of inch sections		″.10*, ″.05

No. 6933.

Marks, $\overset{\text{A 59}}{\text{2 I B 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.		
10,000	.00035	.00025			
20,000	.00065	.00030			
30,000	.00105	.00040			Elastic limit.
	.00990	.00885			
31,000	.01070	.00080			
32,000	.01190	.00120			
33,000	.01265	.00075			
34,000	.01400	.00135			
35,000	.01525	.00125			
67,050					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	67,050
Elastic limit per square inch of original section	do...	30,000
Elongation per inch after rupture	inch..	.2500
Elongation per inch under strain at elastic limit	do...	.00105
Reduction in diameter at point of rupture	do...	.085
Reduction in area after rupture, per cent of original section		30.7
Position of rupture		″.9 from neck
Character of broken surface		dull silky, trace of granulation
Elongation of inch sections		″.28*, ″.22

No. 6910.

Marks, $\overset{\text{A 60}}{\text{I B 15}}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
30,000	.00100	.00040	....	....	Elastic limit.
31,000	.00210	.00110	....	....	
32,000	.00905	.00695	....	....	
33,000	.01040	.00135	....	....	
34,000	.01085	.00045	....	....	
35,000	.01200	.00115	....	....	
67,550	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	67,550
Elastic limit per square inch of original section	do...	30,000
Elongation per inch after rupture	inch..	.1000
Elongation per inch under strain at elastic limit	do...	.00100
Reduction in diameter at point of rupture	do...	.035
Reduction in area after rupture, per cent of original section		13.2
Position of rupture		".60 from neck
Character of broken surface		granular, silky spot at the circumference
Elongation of inch sections		".13*, ".07

No. 6934.

Marks, $\overset{\text{A 60}}{\text{2 I B 15}}$

Diameter, ".505.

Sectional area, .20 square inch.

Guaged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	....	....	
10,000	.00035	.00025	....	....	
19,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds.. 19,500
Elongation per inch after rupture	inch.. .0200
Reduction in diameter at point of rupture	not appreciable
Position of rupture	at middle of stem
Character of broken surface..	dull gray amorphous 10 per cent, dark blue-black serrated 90 per cent
Elongation of inch sections	".02*, ".02*

No. 6911.

Marks, $\overset{\text{A 61}}{\text{I B 15}}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
30,000	.00100	.00040	....	....	
33,000	.00115	.00015	....	....	Elastic limit.
34,000	.01025	.00910	....	....	
35,000	.01090	.00065	....	....	
36,000	.01150	.00060	....	....	
37,000	.01295	.00145	....	....	
38,000	.01375	.00080	....	....	
73,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	73,000
Elastic limit per square inch of original section ....do...	33,000
Elongation per inch after rupture ....inch..	.2100
Elongation per inch under strain at elastic limit...do...	.00115
Reduction in diameter at point of rupture...do...	.075
Reduction in area after rupture, per cent of original section....................................	27.4
Position of rupture..	1" from neck
Character of broken surface....................................	granular, silky spot at the circumference
Elongation of inch sections..	".19, ".23*

No. 6912.

Marks, $\frac{\text{A 62}}{\text{I B 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00020	.00020	0.	....	
10,000	.00045	.00025	....	....	
20,000	.00085	.00040	....	....	
24,000	.00105	.00020	....	....	Elastic limit.
25,000	.00145	.00040	....	....	
26,000	.00275	.00130	....	....	
27,000	.00550	.00275	....	....	
28,000	.00650	.00100	....	....	
29,000	.00775	.00125	....	....	
67,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	67,900
Elastic limit per square inch of original section	do	24,000
Elongation per inch after rupture	inch	.2500
Elongation per inch under strain at elastic limit	do	.00105
Reduction in diameter at point of rupture	do	.105
Reduction in area after rupture, per cent of original section		37.1
Position of rupture		″.7 from neck
Character of broken surface		silky 50 per cent, granular 50 per cent
Elongation of inch sections		″.18, ″.32*

No. 6913.

Marks, $\overset{A\ 63}{I\ B\ 15}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	....	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
28,000	.00085	.00025	....	....	
29,000	.00095	.00010	....	....	Elastic limit.
30,000	.00125	.00030	....	....	
	.00725	.00600	....	....	
31,000	.00800	.00075	....	....	
32,000	.00900	.00100	....	....	
33,000	.01050	.00150	....	....	
34,000	.01275	.00225	....	....	
69,750	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	69,750
Elastic limit per square inch of original section	do...	29,000
Elongation per inch after rupture	inch..	.2250
Elongation per inch under strain at elastic limit	do...	.00095
Reduction in diameter at point of rupture	do...	.075
Reduction in area after rupture, per cent of original section		27.4
Position of rupture		".75 from neck
Character of broken surface		silky, oblique
Elongation of inch sections		".27*, ".18

No. 6948.

Marks, $\overset{\text{A 64}}{\text{I B 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	
80,000	.00100	.00035	....	....	
81,000	.00105	.00005	....	....	Elastic limit.
82,000	.00180	.00075	....	....	
83,000	.00410	.00230	....	....	
84,000	.00500	.00090	....	....	
85,000	.00575	.00075	....	....	
86,000	.00650	.00075	....	....	
85,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	85,100
Elastic limit per square inch of original section ....do...	81,000
Elongation per inch after rupture ....inch..	.1800
Elongation per inch under strain at elastic limit ....do...	.00105
Reduction in diameter at point of rupture ....do...	.045
Reduction in area after rupture, per cent of original section	16.9
Position of rupture	″.6 from neck
Character of broken surface	granular, silky spot at the circumference
Elongation of inch sections	″.18, ″.18*

No. 6970.

Marks, $\overset{A\ 65}{I\ B\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	
28,000	.00100	.00035	....	....	Elastic limit.
29,000	.00150	.00050	....	....	
30,000	.00740	.00590	....	....	
31,000	.00780	.00040	....	....	
32,000	.00840	.00060	....	....	
33,000	.00910	.00070	....	....	
72,400	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	72,400
Elastic limit per square inch of original section	do...	28,000
Elongation per inch after rupture	inch..	.1300
Elongation per inch under strain at elastic limit	do...	.00100
Reduction in diameter at point of rupture	do...	.045
Reduction in area after rupture, per cent of original section		16.9
Position of rupture		″.7 from neck
Character of broken surface		granular, dull silky spot at the circumference; opened cracks in the stem.
Elongation of inch sections		″.12, ″.14*

No. 6995.

Marks, $\overset{\text{A 65}}{\text{2 I B 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	
30,000	.00100	.00035	....	....	
34,000	.00115	.00015	....	....	Elastic limit
35,000	.00740	.00625	....	....	
36,000	.00885	.00145	....	....	
37,000	.00950	.00065	....	....	
38,000	.01000	.00050	....	....	
39,000	.01090	.00090	....	....	
77,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	77.900
Elastic limit per square inch of original section	do...	34,000
Elongation per inch after rupture	inch..	.2300
Elongation per inch under strain at elastic limit	do...	.00115
Reduction in diameter at point of rupture	do...	.085
Reduction in area after rupture, per cent of original section		30.7
Position of rupture		at middle of stem
Character of broken surface		granular 55 per cent, silky 45 per cent
Elongation of inch sections		″.24*, ″.22*

No. 6975.

Marks, $\overset{A\ 66}{I\ B\ 15}$

Diameter, ".505.

Sectional area, .20 square inch.

Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
25,000	.00070	.00010	....	....	
28,000	.00090	.00020	....	....	Elastic limit.
29,000	.00550	.00460	....	....	
30,000	.00635	.00085	....	....	
31,000	.00670	.00035	....	....	
32,000	.00745	.00075	....	....	
33,000	.00810	.00065	....	....	
71,600	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	71,600
Elastic limit per square inch of original section ....do...	28,000
Elongation per inch after rupture ....inch..	.0950
Elongation per inch under strain at elastic limit ....do...	.00090
Reduction in diameter at point of rupture........do...	.025
Reduction in area after rupture, per cent of original section........	9.5
Position of rupture	1" from neck
Character of broken surface	granular, silky spot at circumference
Elongation of inch sections........	".10*, ".09

No. 6996.

Marks, $\overset{\text{A 66}}{\text{2 I B 15}}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.		
10,000	.00030	.00020			
20,000	.00065	.00035			
28,000	.00090	.00025			
29,000	.00100	.00010			Elastic limit.
30,000	.00675	.00575			
31,000	.00760	.00085			
32,000	.00810	.00050			
33,000	.00950	.00140			
34,000	.01060	.00110			
71,600					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	71,600
Elastic limit per square inch of original section	do	29,000
Elongation per inch after rupture	inch	.2350
Elongation per inch under strain at elastic limit	do	.00100
Reduction in diameter at point of rupture	do	.085
Reduction in area after rupture, per cent of original section		30.7
Position of rupture		".95 from neck
Character of broken surface		granular 60 per cent, silky 40 per cent
Elongation of inch sections		".19, ".28*

No. 7005.

Marks, $\overset{A\ 67}{I\ B\ 15}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00065	.00035	....	....	
30,000	.00105	.00040	....	....	
34,000	.00125	.00020	....	....	
35,000	.00130	.00005	....	....	Elastic limit.
36,000	.01115	.00985	....	....	
37,000	.01175	.00060	....	....	
38,000	.01325	.00150	....	....	
39,000	.01475	.00150	....	....	
40,000	.01600	.00125	....	....	
72,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	72,000
Elastic limit per square inch of original section	do...	35,000
Elongation per inch after rupture	inch..	.2300
Elongation per inch under strain at elastic limit	do...	.00130
Reduction in diameter at point of rupture	do...	.075
Reduction in area after rupture, per cent of original section		27.4
Position of rupture		at middle of stem
Character of broken surface		granular, silky spot at the circumference
Elongation of inch sections		".20*, ".26*

No. 7024.

Marks, $\substack{\text{A 68}\\ \text{I B 15}}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
26,000	.00090	.00030	....	....	
27,000	.00095	.00005	....	....	Elastic limit.
28,000	.00850	.00755	....	....	
29,000	.00925	.00075	....	....	
30,000	.01000	.00075	....	....	
31,000	.01075	.00075	....	....	
32,000	.01175	.00100	....	....	
65,400	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	65,400
Elastic limit per square inch of original section	do...	27,000
Elongation per inch after rupture	inch..	.1850
Elongation per inch under strain at elastic limit	do...	.00095
Reduction in diameter at point of rupture	do...	.055
Reduction in area after rupture, per cent of original section		20.5
Position of rupture		at middle of steam
Character of broken surface		granular 60 per cent, silky oblique 40 per cent
Elongation of inch sections		".18*, ".19*

No. 7079.

Marks, $\overset{\text{A 69}}{\text{I B 15}}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.		
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
30,000	.00100	.00040	....	....	
31,000	.00105	.00005	....	....	Elastic limit.
32,000	.00900	.00795	....	....	
33,000	.00975	.00075	....	....	
34,000	.01050	.00075	....	....	
35,000	.01150	.00100	....	....	
36,000	.01250	.00100	....	....	
70,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	70,900
Elastic limit per square inch of original section ....do...	31,000
Elongation per inch after rupture ....inch..	.1750
Elongation per inch under strain at elastic limit..do...	.00105
Reduction in diameter at point of rupture...do...	.055
Reduction in area after rupture, per cent of original section..	20.5
Position of rupture	1".05 from neck
Character of broken surface...	granular 80 per cent, silky 20 per cent; opened cracks along the stem
Elongation of inch sections..	".19*, ".16

No. 7080.

Marks, $^{A\ 70}_{I\ B\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	
25,000	.00095	.00030	....	....	Elastic limit.
26,000	.00650	.00555	....	....	
27,000	.00775	.00125	....	....	
28,000	.00900	.00125	....	....	
29,000	.00985	.00085	....	....	
30,000	.01125	.00140	....	....	
49,800	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	49,800
Elastic limit per square inch of original section	do...	25,000
Elongation per inch after rupture	inch..	.0550
Elongation per inch under strain at elastic limit	do...	.00095
Reduction in diameter at point of rupture	do...	.025
Reduction in area after rupture, per cent of original section		9.5
Position of rupture		″.35 from neck
Character of broken surface		dull amorphous, spongy spot
Elongation of inch sections		″.08*, ″.03

No. 7143.

Marks, $\overset{\text{A 70}}{\text{2 I B 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.		
10,000	.00030	.00020			
20,000	.00060	.00030			
30,000	.00100	.00040			
32,000	.00105	.00005			
33,000	.00110	.00005			Elastic limit.
	.00800	.00690			
34,000	.00950	.00150			
35,000	.01075	.00125			
36,000	.01125	.00050			
37,000	.01250	.00125			
38,000	.01375	.00125			
39,000	.01490	.00115			
71,500					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	71,500
Elastic limit per square inch of original section	do	33,000
Elongation per inch after rupture	inch	.2150
Elongation per inch under strain at elastic limit	do	.00110
Reduction in diameter at point of rupture	do	.065
Reduction in area after rupture, per cent of original section		23.9
Position of rupture		″.90 from neck
Character of broken surface		granular 80 per cent, silky 20 per cent
Elongation of inch sections		″.26*, ″.17

No. 7132.

Marks, $\overset{A\ 71}{I\ B\ 15}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00065	.00035	....	....	
25,000	.00100	.00035	....	....	
26,000	.00110	.00010	....	....	
27,000	.00120	.00010	....	....	Elastic limit.
28,000	.00560	.00440	....	....	
29,000	.00615	.00055	....	....	
30,000	.00740	.00125	....	....	
31,000	.00825	.00085	....	....	
32,000	.00915	.00090	....	....	
33,000	.01000	.00085	....	....	
69,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	69,000
Elastic limit per square inch of original section	do...	27,000
Elongation per inch after rupture	inch..	.1900
Elongation per inch under strain at elastic limit	do...	.00120
Reduction in diameter at point of rupture	do...	.045
Reduction in area after rupture, per cent of original section		16.9
Position of rupture		".80 from neck
Character of broken surface		granular, silky spot at circumference
Elongation of inch sections		".19*, ".19

No. 7133.

Marks, $^{A\ 72}_{I\ B\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00030	.00015	....	....	
20,000	.00070	.00040	....	....	
30,000	.00110	.00040	....	....	
31,000	.00115	.00005	....	....	Elastic limit.
32,000	.01030	.00915	....	....	
33,000	.01060	.00030	....	....	
34,000	.01115	.00055	....	....	
35,000	.01215	.00100	....	....	
36,000	.01350	.00135	....	....	
37,000	.01405	.00055	....	....	
67,450	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	67,450
Elastic limit per square inch of original section ....do...	31,000
Elongation per inch after rupture ....inch..	.1450
Elongation per inch under strain at elastic limit ....do...	.00115
Reduction in diameter at point of rupture....do...	.045
Reduction in area after rupture, per cent of original section....	16.9
Position of rupture	″.75 from neck
Character of broken surface	granular 80 per cent, silky 20 per cent
Elongation of inch sections	″.16*, ″.13

No. 7155.

Marks, $\overset{A\ 72}{2\ I\ B\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00020	.00010	....	....	
20,000	.00045	.00025	....	....	
30,000	.00090	.00045	....	....	
31,000	.00095	.00005	....	....	Elastic limit.
32,000	.01075	.00980	....	....	
33,000	.01125	.00050	....	....	
34,000	.01210	.00085	....	....	
35,000	.01275	.00065	....	....	
36,000	.01375	.00100	....	....	
37,000	.01500	.00125	....	....	
67,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ......pounds..	67,000
Elastic limit per square inch of original section ......do...	31,000
Elongation per inch after rupture ......inch..	.2600
Elongation per inch under strain at elastic limit ......do...	.00095
Reduction in diameter at point of rupture ......do...	.095
Reduction in area after rupture, per cent of original section	34.0
Position of rupture	″.75 from neck
Character of broken surface	silky, trace of granulation
Elongation of inch sections	″.31*, ″.21

No. 7144.

Marks, $\overset{A\ 73}{I\ B\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00035	.00020	....	....	
20,000	.00065	.00030	....	....	
30,000	.00105	.00040	....	....	
31,000	.00110	.00005	....	....	Elastic limit.
32,000	.01110	.01000	....	....	
33,000	.01125	.00015	....	....	
34,000	.01135	.00010	....	....	
35,000	.01160	.00025	....	....	
36,000	.01240	.00080	....	....	
37,000	.01350	.00110	....	....	
70,400	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	70,400
Elastic limit per square inch of original section ....do...	31,000
Elongation per inch after rupture ....inch..	.2150
Elongation per inch under strain at elastic limit ....do...	.00110
Reduction in diameter at point of rupture ....do...	.075
Reduction in area after rupture, per cent of original section	27.4
Position of rupture	″.55 from neck
Character of broken surface	granular, silky spot at circumference
Elongation of inch sections	″.23*, ″.20

No. 7145.

Marks, $\begin{smallmatrix}\text{A 74}\\ \text{I B 15}\end{smallmatrix}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
30,000	.00105	.00045	....	....	
32,000	.00110	.00005	....	....	
34,000	.00120	.00010	....	....	
35,000	.00130 .00160	.00010 .00030	....	....	Elastic limit.
36,000	.01075	.00915	....	....	
37,000	.01095	.00020	....	....	
38,000	.01155	.00060	....	....	
39,000	.01250	.00095	....	....	
40,000	.01360	.00110	....	....	
74,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section....................pounds..	74,000
Elastic limit per square inch of original section....................do...	35,000
Elongation per inch after rupture....................inch..	.1650
Elongation per inch under strain at elastic limit....................do...	.00130
Reduction in diameter at point of rupture....................do...	.055
Reduction in area after rupture, per cent of original section....................	20.5
Position of rupture....................	1″.20 from neck
Character of broken surface....................	granular, silky spot at circumference
Elongation of inch sections....................	″.17*,″.16

No. 7172.

Marks, $\overset{\text{A 75}}{\text{I B 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00030	.00015	....	....	
20,000	.00070	.00040	....	....	
25,000	.00090	.00020	....	....	
27,000	.00100	.00010	....	....	
29,000	.00105	.00005	....	....	Elastic limit.
30,000	.00600	.00495	....	....	
31,000	.00865	.00265	....	....	
32,000	.00920	.00055	....	....	
33,000	.01050	.00130	....	....	
34.000	.01130	.00120	....	....	
35,000	.01240	.00110	....	....	
68,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	68,500
Elastic limit per square inch of original section	do...	29,000
Elongation per inch after rupture	inch..	.1500
Elongation per inch under strain at elastic limit	do...	.00105
Reduction in diameter at point of rupture	do...	.045
Reduction in area after rupture, per cent of original section		16.9
Position of rupture		1″.08 from neck
Character of broken surface		granular, silky spot at circumference
Elongation of inch sections		″.14, ″.16*

No. 7202.

Marks, $\overset{\text{A 75}}{\text{2 I B 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00080	.00015	....	....	
20,000	.00070	.00040	....	....	
25,000	.00095	.00025	....	....	
26,000	.00100	.00005	....	....	
27,000	.00110	.00010	....	....	Elastic limit.
28,000	.00250	.00140	....	....	
29,000	.00450	.00200	....	....	
30,000	.00590	.00140	....	....	
31,000	.00700	.00110	....	....	
32,000	.00775	.00075	....	....	
33,000	.00895	.00120	....	....	
67,950	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	67,950
Elastic limit per square inch of original section	do...	27,000
Elongation per inch after rupture	inch..	.1300
Elongation per inch under strain at elastic limit	do...	.00110
Reduction in diameter at point of rupture	do...	.045
Reduction in area after rupture, per cent of original section		16.9
Position of rupture		″.52 from neck
Character of broken surface		granular, silky spot at circumference
Elongation of inch sections		″.15*, ″.11

No. 7173.

Marks, $\overset{\text{A 76}}{\text{I B 15}}$

Diameter, ″.505.

Sectional area, .20 square inch.

Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00020	.00010	....	....	
20,000	.00050	.00030	....	....	
30,000	.00095	.00045	....	....	
31,000	.00100	.00005	....	....	
32,000	.00105	.00005	....	....	Elastic limit.
33,000	.01050	.00945	....	....	
34,000	.01100	.00050	....	....	
35,000	.01150	.00050	....	....	
36,000	.01235	.00085	....	....	
37,000	.01340	.00105	....	....	
38,000	.01425	.00085	....	....	
69,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	69,100
Elastic limit per square inch of original section	do...	32,000
Elongation per inch after rupture	inch..	.1400
Elongation per inch under strain at elastic limit	do...	.00105
Reduction in diameter at point of rupture	do...	.045
Reduction in area after rupture, per cent of original section		16.9
Position of rupture		″.90 from neck
Character of broken surface		granular, silky spot at circumference
Elongation of inch sections		″.14*, ″.14

No. 7203.

Marks, $\overset{\text{A 76}}{\text{2 I B 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00030	.00015	....	....	
20,000	.00070	.00040	....	....	
30,000	.00110	.00040	....	....	
32,000	.00120	.00010	....	....	
33,000	.00125	.00005	....	....	Elastic limit.
34,000	.00950	.00825	....	....	
35,000	.00990	.00040	....	....	
36,000	.01025	.00035	....	....	
37,000	.01125	.00100	....	....	
38,000	.01250	.00125	....	....	
72,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	72,500
Elastic limit per square inch of original section	do...	33,000
Elongation per inch after rupture	inch..	″.1850
Elongation per inch under strain at elastic limit	do...	.00125
Reduction in diameter at point of rupture	do...	.055
Reduction in area after rupture, per cent of original section		20.5
Position of rupture		1″.04 from neck
Character of broken surface		granular 75 per cent, silky 25 per cent
Elongation of inch sections		″.17, ″.20*

No. 7163.

Marks, $\overset{A\ 77}{I\ B\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00030	.00015	....	....	
20,000	.00070	.00040	....	....	
30,000	.00115	.00045	....	....	
31,000	.00120	.00005	....	....	Elastic limit.
32,000	.01375	.01255	....	....	
68,950	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	68,950
Elastic limit per square inch of original section	do...	31,000
Elongation per inch after rupture	inch..	.2200
Elongation per inch under strain at elastic limit	do...	.00120
Reduction in diameter at point of rupture	do...	.065
Reduction in area after rupture, per cent of original section		23.9
Position of rupture		1″.20 from neck
Character of broken surface		granular 80 per cent, silky 20 per cent
Elongation of inch sections		″.20, ″.24*

No. 7164.

Marks, $^{A\ 78}_{I\ B\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00025	.00010	....	....	
20,000	.00060	.00035	....	....	
30,000	.00105	.00045	....	....	
33,000	.00115	.00010	....	....	
34,000	.00125	.00010	....	....	Elastic limit.
35,000	.01190	.01065	....	....	
36,000	.01250	.00060	....	....	
37,000	.01275	.00025	....	....	
38,000	.01365	.00090	....	....	
39,000	.01525	.00160	....	....	
40,000	.01650	.00125	....	....	
69,400	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section........pounds..	69,400
Elastic limit per square inch of original section........do...	34,000
Elongation per inch after rupture........inch..	.2100
Elongation per inch under strain at elastic limit........do...	.00125
Reduction in diameter at point of rupture........do...	.055
Reduction in area after rupture, per cent of original section........	20.5
Position of rupture........	″.50 from neck
Character of broken surface........	granular 80 per cent, silky 20 per cent
Elongation of inch sections........	″.18, ″.24*

No. 7191.

Marks, $\overset{A\ 79}{I\ B\ 15}$.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.		
10,000	.00035	.00020			
20,000	.00065	.00030			
30,000	.00105	.00040			
32,000	.00115	.00010			
33,000	.00120	.00005			Elastic limit.
34,000	.00875	.00755			
35,000	.00910	.00035			
36,000	.00960	.00050			
37,000	.01035	.00075			
38,000	.01125	.00090			
76,100					Tensile strength.

General summary.

Tensile stength per square inch of original section	pounds..	76,100
Elastic limit per square inch of original section	do...	33,000
Elongation per inch after rupture	inch..	.1700
Elongation per inch under strain at elastic limit	do...	.00120
Reduction in diameter at point of rupture	do...	.055
Reduction in area after rupture, per cent of original section		20.5
Position of rupture		1″.10 from neck
Character of broken surface		granular, silky spot at circumference
Elongation of inch sections		″.17, ″.17*

No. 7192.

Marks, $\overset{A\ 80}{I\ B\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00025	.00015	....	....	
20,000	.00060	.00035	....	....	
22,000	.00070	.00010	....	....	Elastic limit.
23,000	.00155	.00085	....	....	
24,000	.00220	.00065	....	....	
25,000	.00350	.00130	....	....	
26,000	.00425	.00075	....	....	
27,000	.00515	.00090	....	....	
67,400	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	67,400
Elastic limit per square inch of original section	do...	22,000
Elongation per inch after rupture	inch..	.2300
Elongation per inch under strain at elastic limit	do..	.00070
Reduction in diameter at point of rupture	do...	.085
Reduction in area after rupture, per cent of original section		30.70
Position of rupture		1″.10 from neck
Character of broken surface		granular, silky spot at circumference
Elongation of inch sections		″.20, ″.26*

No. 7193.

Marks, $\overset{\text{A 81}}{\text{I B 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00065	.00035	....	....	
22,000	.00075	.00010	....	....	
23,000	.00080	.00005	....	....	Elastic limit.
24,000	.00120	.00040	....	....	
25,000	.00155	.00035	....	....	
26,000	.00250	.00095	....	....	
27,000	.00390	.00140	....	....	
28,000	.00500	.00110	....	....	
29,000	.00600	.00100	....	....	
67,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	67,500
Elastic limit per square inch of original section	do	23,000
Elongation per inch after rupture	inch	.1750
Elongation per inch under strain at elastic limit	do	.00080
Reduction in diameter at point of rupture	do	.045
Reduction in area after rupture, per cent of original section		16.9
Position of rupture		1″.18 from neck
Character of broken surface		granular, silvery luster, silky spot at the circumference
Elongation of inch sections		″.17, ″.18*

OUTER BASES—15-POUNDER GUN MOUNTS.

STEEL CASTINGS.

No. 6959.

Marks, $^{D\,13}_{O\,B\,15}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00065	.00035	....	....	
30,000	.00095	.00030	....	....	
33,000	.00105	.00010	....	....	Elastic limit.
34,000	.00200	.00095	....	....	
35,000	.00580	.00380	....	....	
36,000	.01050	.00520	....	....	
37,000	.01150	.00100	....	....	
38,000	.01250	.00100	....	....	
63,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section.................................. .....pounds..	63,000
Elastic limit per square inch of original section..do...	33,000
Elongation per inch after rupture..inch..	.1100
Elongation per inch under strain at elastic limit..do...	.00105
Reduction in diameter at point of rupture..do...	.035
Reduction in area after rupture, per cent of original section....................................	13.2
Position of rupture..	".7 from neck
Character of broken surface...............................	dull amorphous oblique, small granular spots
Elongation of inch sections..	".15*, ".07

No. 6960.

Marks, $\overset{D\ 14}{O\ B\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	
30,000	.00095	.00030	....	....	
35,000	.00130	.00035	....	....	
36,000	.00135	.00005	....	....	Elastic limit.
37,000	.01225	.01090	....	....	
38,000	.01255	.00030	....	....	
39,000	.01325	.00070	....	....	
40,000	.01450	.00125	....	....	
41,000	.01575	.00125	....	....	
66,550	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	66,550
Elastic limit per square inch of original section	do...	36,000
Elongation per inch after rupture	inch..	.1100
Elongation per inch under strain at elastic limit	do...	.00135
Reduction in diameter at point of rupture	do...	.045
Reduction in area after rupture, per cent of original section		16.9
Position of rupture		at middle of stem
Character of broken surface		granular 50 per cent, dull amorphous oblique 50 per cent
Elongation of inch sections		″.13*, ″.08

No. 6961.

Marks, $\overset{D\ 29}{O\ B\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010		....	
10,000	.00035	.00025	....	....	
20,000	.00070	.00035	....	....	
25,000	.00095	.00025	....	....	
26,000	.00100	.00005	....	....	Elastic limit.
27,000	.00150	.00050	....	....	
28,000	.00245	.00095	....	....	
29,000	.00330	.00085	....	....	
30,000	.00425	.00095	....	....	
31,000	.00550	.00125	....	....	
59,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	59,100
Elastic limit per square inch of original section ....do...	26,000
Elongation per inch after rupture ....inch..	.0700
Elongation per inch under strain at elastic limit ....do...	.00100
Reduction in diameter at point of rupture........do...	.035
Reduction in area after rupture, per cent of original section........	13.2
Position of rupture	″.6 from neck
Character of broken surface	granular, spongy spot at circumference
Elongation of inch sections	″.05, ″.09*

No. 6963.

15

".505.

rea, .20 square inch.

ngth, 2".

	longation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
	Inch.	*Inch.*	*Inch.*	*Inch.*	
	0.	0.	0.	0.	Initial load.
	.00010	.00010	0.	....	
	.00035	.00025	....	....	
	.00060	.00025	....	....	Elastic limit.
	.00105	.00045	....	....	
	.00155	.00050	....	....	
	.00205	.00050	....	....	
	.00275	.00070	....	....	
0	.00405	.00130	....	....	
0	....	....	....	....	Tensile strength.

General summary.

strength per square inch of original section ....pounds..	58,350
limit per square inch of original section ....do...	20,000
tion per inch after rupture ....inch..	.2050
tion per inch under strain at elastic limit ....do...	.00060
tion in diameter at point of rupture....do...	.085
tion in area after rupture, per cent of original section	30.7
on of rupture	1".1 from neck
cter of broken surface....	granular, dull silky center
gation of inch sections....	".23*, ".18

No. 6974.

Marks, $\overset{\text{D 49}}{\text{O B 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00065	.00035	....	....	
29,000	.00095	.00030	....	....	Elastic limit.
30,000	.00205	.00110	....	....	
31,000	.00400	.00195	....	....	
32,000	.00490	.00090	....	....	
33,000	.00565	.00075	....	....	
34,000	.00640	.00075	....	....	
80,400	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	80,400
Elastic limit per square inch of original section	do...	29,000
Elongation per inch after rupture	inch..	.1600
Elongation per inch under strain at elastic limit	do...	.00095
Reduction in diameter at point of rupture	do...	0.45
Reduction in area after rupture, per cent of original section		16.9
Position of rupture		at middle of stem
Character of broken surface		granular, silky spot at circumference
Elongation of inch sections		″.15*, ″.17*

No. 6985.

Marks, $\overset{\text{D 50}}{\text{O B 15}}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00070	.00035	....	....	
30,000	.00100	.00030	....	....	
33,000	.00110	.00010	....	....	Elastic limit.
34,000	.00140	.00030	....	....	
35,000	.01165	.01025	....	....	
36,000	.01230	.00065	....	....	
37,000	.01300	.00070	....	....	
38,000	.01450	.00150	....	....	
55,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	55,100
Elastic limit per square inch of original section	do...	33,000
Elongation per inch after rupture	inch..	.0800
Elongation per inch under strain at elastic limit	do...	.00110
Reduction in diameter at point of rupture	do...	.025
Reduction in area after rupture, per cent of original section		9.5
Position of rupture		".55 from neck
Character of broken surface		dull amorphous, oblique; opened cracks along the stem
Elongation of inch sections		".11*, ".05

No. 7027.

Marks, $\overset{\text{D 51}}{\text{O B 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00005	.00005	0.	....	
10,000	.00025	.00020	....	....	
20,000	.00055	.00030	....	....	
30,000	.00100	.00045	....	....	Elastic limit.
31,000	.00165	.00065	....	....	
32,000	.00245	.00080	....	....	
33,000	.00295	.00050	....	....	
34,000	.00320	.00025	....	....	
35,000	.00355	.00035	....	....	
99,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	99,100
Elastic limit per square inch of original section	do	30,000
Elongation per inch after rupture	inch	.1150
Elongation per inch under strain at elastic limit	do	.00100
Reduction in diameter at point of rupture	do	.035
Reduction in area after rupture, per cent of original section		13.2
Position of rupture		″.50 from neck
Character of broken surface		granular
Elongation of inch sections		″.10, ″.13*

No. 7028.

Marks, $\substack{\text{D 52}\\\text{O B 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	
25,000	.00090	.00025	....	....	
26,000	.00095	.00005	....	....	Elastic limit.
27,000	.00175	.00080	....	....	
28,000	.00460	.00285	....	....	
29,000	.00600	.00140	....	....	
30,000	.00705	.00105	....	....	
31,000	.00775	.00070	....	....	
67,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	67,500
Elastic limit per square inch of original section	do...	26,000
Elongation per inch after rupture	inch..	.1100
Elongation per inch under strain at elastic limit	do...	.00095
Reduction in diameter at point of rupture	do...	.035
Reduction in area after rupture, per cent of original section		13.2
Position of rupture		″.25 from neck
Character of broken surface		granular at circumference, dull amorphous center
Elongation of inch sections		″.10, ″.12*

No. 6959.

Marks, $\overset{D\ 13}{O\ B\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00065	.00035	....	....	
30,000	.00095	.00030	....	....	
33,000	.00105	.00010	....	....	Elastic limit.
34,000	.00200	.00095	....	....	
35,000	.00530	.00330	....	....	
36,000	.01050	.00520	....	....	
37,000	.01150	.00100	....	....	
38,000	.01250	.00100	....	....	
63,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section......pounds..	63,000
Elastic limit per square inch of original section......do...	33,000
Elongation per inch after rupture......inch..	.1100
Elongation per inch under strain at elastic limit......do...	.00105
Reduction in diameter at point of rupture......do...	.035
Reduction in area after rupture, per cent of original section......	13.2
Position of rupture......	″.7 from neck
Character of broken surface......	dull amorphous oblique, small granular spots
Elongation of inch sections......	″.15*, ″.07

Marks, $\frac{D\ 13}{O\ B\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	[illegible]
5,000	.00010	.00010	0.		
10,000	.00030	.00020			
20,000	.00065	.00035			
30,000	.00095	.00030			
33,000	.00105	.00010			[illegible]
34,000	.00200	.00095			
35,000	.00530	.00330			
36,000	.01050	.00520			
37,000	.01150	.00100			
38,000	.01250	.00100			
63,000					[illegible]

General summary.

Tensile strength per square inch of original section 0
Elastic limit per square inch of original section 00
Elongation per inch after rupture 35
Elongation per inch under strain at elastic limit 13.2
Reduction in diameter at point of rupture .... neck
Reduction in area after rupture, per cent of original section .... ence
Position of rupture .... ″.09*
Character of broken surface .... [illegible]
Elongation of inch sections ....

No. 6960.

Marks, $\overset{D\ 14}{O\ B\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	
30,000	.00095	.00030	....	....	
35,000	.00130	.00035	....	....	
36,000	.00135	.00005	....	....	Elastic limit.
37,000	.01225	.01090	....	....	
38,000	.01255	.00030	....	....	
39,000	.01325	.00070	....	....	
40,000	.01450	.00125	....	....	
41,000	.01575	.00125	....	....	
66,550	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	66,550
Elastic limit per square inch of original section	do...	36,000
Elongation per inch after rupture	inch..	.1100
Elongation per inch under strain at elastic limit	do...	.00135
Reduction in diameter at point of rupture	do...	.045
Reduction in area after rupture, per cent of original section		16.9
Position of rupture		at middle of stem
Character of broken surface		granular 50 per cent, dull amorphous oblique 50 per cent
Elongation of inch sections		″.13*, ″.08

No. 6961.

Marks, $^{D\,29}_{O\,B\,15}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010		....	
10,000	.00035	.00025	....	....	
20,000	.00070	.00035	....	....	
25,000	.00095	.00025	....	....	
26,000	.00100	.00005	....	....	Elastic limit.
27,000	.00150	.00050	....	....	
28,000	.00245	.00095	....	....	
29,000	.00330	.00085	....	....	
30,000	.00425	.00095	....	....	
31,000	.00550	.00125	....	....	
59,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	59,100
Elastic limit per square inch of original section	do...	26,000
Elongation per inch after rupture	inch..	.0700
Elongation per inch under strain at elastic limit	do...	.00100
Reduction in diameter at point of rupture	do...	.035
Reduction in area after rupture, per cent of original section		13.2
Position of rupture		".6 from neck
Character of broken surface		granular, spongy spot at circumference
Elongation of inch sections		".05, ".09*

No. 6962.

Marks, $\overset{D\ 45}{O\ B\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00035	.00020	....	....	
20,000	.00075	.00040	....	....	Elastic limit.
21,000	.00135	.00060	....	....	
22,000	.00195	.00060	....	....	
23,000	.00255	.00060	....	....	
24,000	.00340	.00085	....	....	
25,000	.00485	.00145	....	....	
58,200	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	58,200
Elastic limit per square inch of original section ....inch..	20,000
Elongation per inch after rupture ....do...	.2600
Elongation per inch under strain at elastic limit ....do...	.00075
Reduction in diameter at point of rupture ....do...	.075
Reduction in area after rupture, per cent of original section	27.4
Position of rupture	″.5 from neck
Character of broken surface	granular, dull spongy spot at circumference
Elongation of inch sections	″.22, ″.30*

No. 6963.

Marks, $\substack{D\ 46\\ O\ B\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00060	.00025	....	....	Elastic limit.
21,000	.00105	.00045	....	....	
22,000	.00155	.00050	....	....	
23,000	.00205	.00050	....	....	
24,000	.00275	.00070	....	....	
25,000	.00405	.00130	....	....	
58,350	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	58,350
Elastic limit per square inch of original section ....do...	20,000
Elongation per inch after rupture ....inch..	.2050
Elongation per inch under strain at elastic limit ....do...	.00060
Reduction in diameter at point of rupture ....do...	.085
Reduction in area after rupture, per cent of original section	30.7
Position of rupture	1″.1 from neck
Character of broken surface	granular, dull silky center
Elongation of inch sections	″.23*, ″.18

No. 6974.

Marks, $\overset{\text{D 49}}{\text{O B 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00065	.00035	....	....	
29,000	.00095	.00030	....	....	Elastic limit.
30,000	.00205	.00110	....	....	
31,000	.00400	.00195	....	....	
32,000	.00490	.00090	....	....	
33,000	.00565	.00075	....	....	
34,000	.00640	.00075	....	....	
80,400	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	80,400
Elastic limit per square inch of original section ....do...	29,000
Elongation per inch after rupture ....inch..	.1600
Elongation per inch under strain at elastic limit ....do...	.00095
Reduction in diameter at point of rupture ....do...	0.45
Reduction in area after rupture, per cent of original section	16.9
Position of rupture	at middle of stem
Character of broken surface	granular, silky spot at circumference
Elongation of inch sections	″.15*, ″.17*

No. 6985.

Marks, $\overset{\text{D 50}}{\text{O B 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00070	.00035	....	....	
30,000	.00100	.00030	....	....	
33,000	.00110	.00010	....	....	Elastic limit.
34,000	.00140	.00030	....	....	
35,000	.01165	.01025	....	....	
36,000	.01230	.00065	....	....	
37,000	.01300	.00070	....	....	
38,000	.01450	.00150	....	....	
55,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	55,100
Elastic limit per square inch of original section ....do...	33,000
Elongation per inch after rupture ....inch..	.0800
Elongation per inch under strain at elastic limit ....do...	.00110
Reduction in diameter at point of rupture ....do...	.025
Reduction in area after rupture, per cent of original section	9.5
Position of rupture	″.55 from neck
Character of broken surface	dull amorphous, oblique; opened cracks along the stem
Elongation of inch sections	″.11*, ″.05

No. 7027.

Marks, $\overset{\text{D 51}}{\text{O B 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00005	.00005	0.	....	
10,000	.00025	.00020	....	....	
20,000	.00055	.00030	....	....	
30,000	.00100	.00045	....	....	Elastic limit.
31,000	.00165	.00065	....	....	
32,000	.00245	.00080	....	....	
33,000	.00295	.00050	....	....	
34,000	.00320	.00025	....	....	
35,000	.00355	.00035	....	....	
99,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	99,100
Elastic limit per square inch of original section	do...	30,000
Elongation per inch after rupture	inch..	.1150
Elongation per inch under strain at elastic limit	do...	.00100
Reduction in diameter at point of rupture	do...	.035
Reduction in area after rupture, per cent of original section		13.2
Position of rupture		″.50 from neck
Character of broken surface		granular
Elongation of inch sections		″.10, ″.13

No. 7028.

Marks, $^{\text{D 52}}_{\text{O B 15}}$

Diameter, ″.505.

Sectional area, .20 square inch.

Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	
25,000	.00090	.00025	....	....	
26,000	.00095	.00005	....	....	Elastic limit.
27,000	.00175	.00080	....	....	
28,000	.00460	.00285	....	....	
29,000	.00600	.00140	....	....	
30,000	.00705	.00105	....	....	
31,000	.00775	.00070	....	....	
67,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	67,500
Elastic limit per square inch of original section	do...	26,000
Elongation per inch after rupture	inch..	.1100
Elongation per inch under strain at elastic limit	do...	.00095
Reduction in diameter at point of rupture	do...	.085
Reduction in area after rupture, per cent of original section		18.2
Position of rupture		″.25 from neck
Character of broken surface		granular at circumference, dull amorphous center
Elongation of inch sections		″.10, ″.12*

No. 7081.

Marks, $\overset{D\ 53}{O\ B\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
30,000	.00100	.00040	....	....	
33,000	.00115	.00015	....	....	
34,000	.00120	.00005	....	....	Elastic limit.
35,000	.00860	.00740	....	....	
36,000	.00965	.00105	....	....	
37,000	.01075	.00110	....	....	
38,000	.01150	.00075	....	....	
39,000	.01250	.00100	....	....	
74,750	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	74,750
Elastic limit per square inch of original section ....do...	34,000
Elongation per inch after rupture ....inch..	.1900
Elongation per inch under strain at elastic limit ....do...	.00120
Reduction in diameter at point of rupture............do...	.055
Reduction in area after rupture, per cent of original section............	20.5
Position of rupture............	1.″05 from neck
Character of broken surface	granular, silky spot at circumference
Elongation of inch sections	″.19, ″.19

No. 7082.

Marks, $\substack{\text{D 54}\\ \text{O B 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	
28,000	.00095	.00030	....	....	
29,000	.00105	.00010	....	....	Elastic limit.
30,000	.00140	.00035	....	....	
31,000	.00160	.00020	....	....	
32,000	.00550	.00390	....	....	
33,000	.00700	.00150	....	....	
34,000	.00810	.00110	....	....	
67,550	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section .... pounds..	67,550
Elastic limit per square inch of original section .... do...	29,000
Elongation per inch after rupture .... inch..	.0950
Elongation per inch under strain at elastic limit .... do...	.00105
Reduction in diameter at point of rupture .... do...	.035
Reduction in area after rupture, per cent of original section	13.2
Position of rupture	″.6 from neck
Character of broken surface	granular, silky spot on one side having a cavity at center ″.08 diameter.
Elongation of inch sections	″.10*, ″.09

No. 7170.

Marks, $\overset{\text{D 54}}{\text{2 O B 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00020	.00010	....	....	
20,000	.00060	.00040	....	....	
25,000	.00060	.00020	....	....	
26,000	.00090	.00010	....	....	
27,000	.00100	.00010	....	....	Elastic limit.
28,000	.00220	.00120	....	....	
29,000	.00310	.00090	....	....	
30,000	.00560	.00250	....	....	
31,000	.00700	.00140	....	....	
32,000	.00770	.00070	....	....	
33,000	.00840	.00070	....	....	
34,000	.00900	.00060	....	....	
72,850	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	72,850
Elastic limit per square inch of original section ....do...	27,000
Elongation per inch after rupture ....inch..	.1600
Elongation per inch under strain at elastic limit ....do...	.00100
Reduction in diameter at point of rupture ....do...	.045
Reduction in area after rupture, per cent of original section	16.9
Position of rupture	″.75 from neck
Character of broken surface	granular, silky spot at circumference
Elongation of inch sections	″.16, ″.16*

No. 7089.

Marks, $^{D\,55}_{O\,B\,15}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	
28,000	.00100	.00035	....	....	Elastic limit.
29,000	.00160	.00060	....	....	
30,000	.00295	.00135	....	....	
31,000	.00345	.00050	....	....	
32,000	.00450	.00105	....	....	
33,000	.00500	.00050	....	....	
72,050	....	....	....	....	Tensile strengtn.

General summary.

Tensile strength per square inch of original section ......pounds..	72,050
Elastic limit per square inch of original section ......do...	28,000
Elongation per inch after rupture ......inch..	.1350
Elongation per inch under strain at elastic limit ......do...	.00100
Reduction in diameter at point of rupture ......do...	.035
Reduction in area after rupture, per cent of original section	13.2
Position of rupture	".45 from neck
Character of broken surface	granular, silky spot at circumference
Elongation of inch sections	".12, "15*

No. 7130.

Marks, $\overset{D\ 56}{O\ B\ 15}$

Diameter, ".505.

Sectional area, .20 square inch.

Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.		
10,000	.00035	.00025			
20,000	.00065	.00030			
30,000	.00105	.00040			
32,000	.00115	.00010			
33,000	.00120	.00005			Elastic limit.
34,000	.00625	.00505			
35,000	.00650	.00025			
36,000	.00695	.00045			
37,000	.00760	.00065			
38,000	.00855	.00095			
39,000	.00925	.00070			
81,000					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	81,000
Elastic limit per square inch of original section	do...	33,000
Elongation per inch after rupture	inch..	.1750
Elongation per inch under strain at elastic limit	do...	.00120
Reduction in diameter at point of rupture	do...	.035
Reduction in area after rupture, per cent of original section		13.2
Position of rupture		1".03 from neck
Character of broken surface		granular, silky spot at circumference
Elongation of inch sections		".18*, ".17

No. 7131.

Marks, $\overset{D\ 57}{O\ B\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00005	.00005	0.		
10,000	.00020	.00015			
20,000	.00055	.00035			
30,000	.00100	.00045			
33,000	.00105	.00005			
34,000	.00110	.00005			Elastic limit.
35,000	.00850	.00740			
36,000	.00950	.00100			
37,000	.01050	.00100			
38,000	.01100	.00050			
39,000	.01250	.00150			
40,000	.01300	.00050			
73,950					Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	73,950
Elastic limit per square inch of original section ....do...	34,000
Elongation per inch after rupture ....inch..	.1800
Elongation per inch under strain at elastic limit........do...	.00110
Reduction in diameter at point of rupture........do...	.045
Reduction in area after rupture, per cent of original section	16.9
Position of rupture........	″.70 from neck
Character of broken surface........	granular, silky spot at circumference
Elongation of inch sections	″.17, ″.19*

No. 7146.

Marks, $\overset{D\ 58}{O\ B\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00005	.00005	0.	....	
10,000	.00015	.00010	....	....	
20,000	.00045	.00030	....	....	
30,000	.00075	.00030	....	....	
32,000	.00090	.00015	....	....	
33,000	.00095	.00005	....	....	
34,000	.00100	.00005	....	....	Elastic limit.
	.00700	.00600	....	....	
35,000	.00780	.00080	....	....	
36,000	.00850	.00070	....	....	
37,000	.00950	.00100	....	....	
38,000	.01050	.00100	....	....	
39,000	.01100	.00050	....	....	
40,000	.01200	.00100	....	....	
74,900	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	74,900
Elastic limit per square inch of original section	do...	34,000
Elongation per inch after rupture	inch..	.1800
Elongation per inch under strain at elastic limit	do...	.00100
Reduction in diameter at point of rupture	do...	.055
Reduction in area after rupture, per cent of original section		20.5
Position of rupture		″.55 from neck
Character of broken surface		granular, silky spot at circumference
Elongation of inch sections		″.16, ″.20

No. 7171.

Marks, $^{\text{D 59}}_{\text{O B 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00030	.00015	....	....	
20,000	.00060	.00030	....	....	
25,000	.00080	.00020	....	....	
27,000	.00090	.00010	....	....	
29,000	.00100	.00010	....	....	Elastic limit.
30,000	.00800	.00700	....	....	
31,000	.00815	.00015	....	....	
32,000	.00890	.00075	....	....	
33,000	.00990	.00100	....	....	
34,000	.01060	.00070	....	....	
35,000	.01190	.00130	....	....	
68,950	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	68,950
Elastic limit per square inch of original section ....do...	29,000
Elongation per inch after rupture ....inch..	.1600
Elongation per inch under strain at elastic limit ....do...	.00100
Reduction in diameter at point of rupture ....do...	.045
Reduction in area after rupture, per cent of original section	16.9
Position of rupture	″.25 from neck
Character of broken surface	granular, silky spot at circumference
Elongation of inch sections	″.15, ″.17*

No. 7162.

Marks, $^{\text{D 60}}_{\text{O B 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010			
10,000	.00030	.00020			
20,000	.00070	.00040			
24,000	.00085	.00015			
26,000	.00095	.00010			
28,000	.00100	.00005			
29,000	.00105	.00005			
30,000	.00115	.00010			Elastic limit.
31,000	.00400	.00285			
32,000	.00580	.00180			
33,000	.00660	.00080			
34,000	.00750	.00090			
35,000	.00850	.00100			
36,000	.00900	.00050			
75,500					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	75,500
Elastic limit per square inch of original section	do...	30,000
Elongation per inch after rupture	inch..	.1700
Elongation per inch under strain at elastic limit	do...	.00115
Reduction in diameter at point of rupture	do...	.045
Reduction in area after rupture, per cent of original section		16.9
Position of rupture		″.90 from neck
Character of broken surface		granular, silky spot at circumference
Elongation of inch sections		″.17, ″.17*

No. 7180.

Marks, $\overset{D\ 61}{O\ B\ 15}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00025	.00010	....	....	
20,000	.00065	.00040	....	....	
25,000	.00085	.00020	....	....	
27,000	.00095	.00010	....	....	
28,000	.00100	.00005	....	....	
29,000	.00110	.00010	....	....	Elastic limit.
30,000	.00770	.00660	....	....	
31,000	.00850	.00080	....	....	
32,000	.00950	.00100	....	....	
33,000	.01050	.00100	....	....	
34,000	.01225	.00175	....	....	
35,000	.01300	.00075	....	....	
64,950	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	64,950
Elastic limit per square inch of original section ....do...	29,000
Elongation per inch after rupture ....inch..	.1350
Elongation per inch under strain at elastic limit ....do...	.00110
Reduction in diameter at point of rupture ....do...	.035
Reduction in area after rupture, per cent of original section	13.2
Position of rupture	".70 from neck
Character of broken surface	granular 60 per cent, silky 40 per cent
Elongation of inch sections	".12, ".15*

No. 7181.

Marks, $\overset{\text{D 62}}{\text{O B 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00030	.00015	....	....	
20,000	.00065	.00035	....	....	
25,000	.00085	.00020	....	....	
27,000	.00095	.00010	....	....	
29,000	.00105	.00010	....	....	Elastic limit.
30,000	.00885	.00780	....	....	
31,000	.00950	.00065	....	....	
32,000	.01000	.00050	....	....	
33,000	.01100	.00100	....	....	
34,000	.01200	.00100	....	....	
35,000	.01325	.00125	....	....	
65,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	65,000
Elastic limit per square inch of original section	do...	29,000
Elongation per inch after rupture	inch..	.1500
Elongation per inch under strain at elastic limit	do...	.00105
Reduction in diameter at point of rupture	do...	.045
Reduction in area after rupture, per cent of original section		16.9
Position of rupture		″.70 from neck
Character of broken surface		silky, trace of granulation
Elongation of inch sections		″.15, ″.15

No. 7182.

Marks, $\overset{D\ 63}{O\ B\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00065	.00035	....	....	
30,000	.00105	.00040	....	....	
31,000	.00110	.00005	....	....	
32,000	.00115	.00005	....	....	Elastic limit.
33,000	.00800	.00685	....	....	
34,000	.00915	.00115	....	....	
35,000	.00965	.00050	....	....	
36,000	.01030	.00065	....	....	
37,000	.01150	.00120	....	....	
70,100	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	70,100
Elastic limit per square inch of original section	do...	32,000
Elongation per inch after rupture	inch..	.1950
Elongation per inch under strain at elastic limit	do...	.00115
Reduction in diameter at point of rupture	do...	.055
Reduction in area after rupture, per cent of original section		20.5
Position of rupture		″.70 from neck
Character of broken surface		granular 80 per cent, silky 20 per cent
Elongation of inch sections		″.21*, ″.18

No. 7183.

Marks, $\overset{\text{D 64}}{\text{O B 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00030	.00015	....	....	
20,000	.00065	.00035	....	....	
30,000	.00105	.00040	....	....	
32,000	.00115	.00010	....	....	Elastic limit.
33,000	.00760	.00645	....	....	
34,000	.00800	.00040	....	....	
35,000	.00850	.00050	....	....	
36,000	.00925	.00075	....	....	
37,000	.01025	.00100	....	....	
73,600	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	73,600
Elastic limit per square inch of original section	do...	32,000
Elongation per inch after rupture	inch..	.1750
Elongation per inch under strain at elastic limit	do...	.00115
Reduction in diameter at point of rupture	do...	.055
Reduction in area after rupture, per cent of original section		20.5
Position of rupture		″.95 from neck
Character of broken surface		granular 90 per cent, silky 10 per cent
Elongation of inch sections		″.16, ″.19

No. 7190.

Marks, $\overset{D\ 65}{O\ B\ 15}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00030	.00015	....	....	
20,000	.00065	.00035	....	....	
25,000	.00090	.00025	....	....	
26,000	.00095	.00005	....	....	
27,000	.00100	.00005	....	....	Elastic limit.
28,000	.00350	.00250	....	....	
29,000	.00590	.00240	....	....	
30,000	.00700	.00110	....	....	
31,000	.00775	.00075	....	....	
32,000	.00830	.00055	....	....	
64,400	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section........pounds..	64,400
Elastic limit per square inch of original section........do...	27,000
Elongation per inch after rupture........inch..	.0750
Elongation per inch under strain at elastic limit........do...	.00100
Reduction in diameter at point of rupture........do...	.025
Reduction in area after rupture, per cent of original section........	9.5
Position of rupture........	″.05 from neck
Character of broken surface........	granular 85 per cent, silky 15 per cent
Elongation of inch sections........	″.06, ″.09*

No. 7201.

Marks, $\substack{D\ 66\\ O\ B\ 15}$
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	.0	Initial load.
5,000	.00015	.00015	0.		
10,000	.00030	.00015			
20,000	.00065	.00035			
25,000	.00085	.00020			
27,000	.00095	.00010			
29,000	.00110	.00015			Elastic limit.
30,000	.00150	.00040			
31,000	.00600	.00450			
32,000	.00675	.00075			
33,000	.00725	.00050			
34,000	.00850	.00125			
35,000	.00950	.00100			
72,400					Tensile strength.

General summary.

Tensile strength per square inch of original section .... pounds..	72,400
Elastic limit per square inch of original section .... do...	29,000
Elongation per inch after rupture .... inch..	.1550
Elongation per inch under strain at elastic limit .... do...	.00110
Reduction in diameter at point of rupture .... do...	.045
Reduction in area after rupture, per cent of original section	16.9
Position of rupture	".20 from neck
Character of broken surface	granular 80 per cent, silky 20 per cent
Elongation of inch sections	".16*, ".15

PISTON RODS—15-POUNDER GUN MOUNTS.

STEEL FORGINGS.

No. 6885.

Marks, $\overset{\text{A 81}}{\text{P R 15}}$
Diameter, ''.505.
Sectional area, .20 square inch.
Gauged length, 2''.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.		
10,000	.00030	.00020			
20,000	.00065	.00035			
30,000	.00100	.00035			
38,000	.00135	.00035			
39,000	.00140	.00005			Elastic limit.
40,000	.01350	.01210			
41,000	.01390	.00040			
42,000	.01450	.00060			
43,000	.01560	.00110			
44,000	.01660	.00100			
77,500					Tensile strength.

General summary.

Tensile strength per square inch of original section .... pounds..	77,500
Elastic limit per square inch of original section .... do...	39,000
Elongation per inch after rupture .... inch..	.2700
Elongation per inch under strain at elastic limit .... do...	.00140
Reduction in diameter at point of rupture .... do...	.115
Reduction in area after rupture, per cent of original section	40.3
Position of rupture	1''.1 from neck
Character of broken surface	silky
Elongation of inch sections	''.32*, ''.22

No. 6886.

Marks, $\overset{\text{A 82}}{\text{P R 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	
30,000	.00100	.00035	....	....	
38,000	.00140 .01200	.00040 .01060	....	....	Elastic limit.
39,000	.01240	.00040	....	....	
40,000	.01290	.00050	....	....	
41,000	.01350	.00060	....	....	
42,000	.01450	.00100	....	....	
43,000	.01570	.00120	....	....	
78,050	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	78,050
Elastic limit per square inch of original section	do	38,000
Elongation per inch after rupture	inch	.2700
Elongation per inch under strain at elastic limit	do	.00140
Reduction in diameter at point of rupture	do	.115
Reduction in area after rupture, per cent of original section		40.8
Position of rupture		1″.1 from neck
Character of broken surface		silky
Elongation of inch sections		″.32*, ″.22

CASEMATE MOUNTS—15-POUNDER GUNS.

STEEL CASTINGS.

No. 6462.

Marks, $\overset{\text{A 1}}{\text{C M 15}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00020	.00010	....	....	
15,000	.00050	.00030	....	....	
20,000	.00085	.00035	....	....	
22,000	.00100	.00015	....	....	
24,000	.00115	.00015	....	....	Elastic limit.
25,000	.00160	.00045	....	....	
26,000	.00195	.00035	....	....	
27,000	.00250	.00055	....	....	
28,000	.00275	.00025	....	....	
29,000	.00675	.00400	....	....	
30,000	.00820	.00145	....	....	
31,000	.00880	.00060	....	....	
32,000	.00975	.00095	....	....	
33,000	.01150	.00175	....	....	
34,000	.01250	.00100	....	....	
63,950	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section .... pounds..	63,950
Elastic limit per square inch of original section .... do...	24,000
Elongation per inch after rupture .... inch..	.1800
Elongation per inch under strain at elastic limit .... do...	.001150
Reduction in diameter at point of rupture .... do...	.045
Reduction in area after rupture, per cent of original section	16.9
Position of rupture	″.70 from neck
Character of broken surface	fine granular, dull spot at the circumference
Elongation of inch sections	″.18, ″.18*

No. 6463.

Marks, $\overset{\text{A 2}}{\text{C M}}$ 15
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00040	.00025	....	....	
15,000	.00060	.00020	....	....	
18,000	.00085	.00025	....	....	
19,000	.00095	.00010	....	....	
20,000	.00105	.00010	....	....	Elastic limit.
21,000	.00140	.00035	....	....	
22,000	.00150	.00010	....	....	
23,000	.00180	.00030	....	....	
24,000	.00210	.00030	....	....	
25,000	.00275	.00065	....	....	
26,000	.00390	.00115	....	....	
27,000	.00450	.00060	....	....	
28,000	.00560	.00110	....	....	
29,000	.00640	.00080	....	....	
30,000	.00775	.00135	....	....	
31,000	.00855	.00080	....	....	
32,000	.00975	.00120	....	....	
33,000	.01075	.00100	....	....	
54,850	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	54,850
Elastic limit per square inch of original section	do...	20,000
Elongation per inch after rupture	inch..	.0800
Elongation per inch under strain at elastic limit	do...	.00105
Reduction in diameter at point of rupture	do...	.045
Reduction in area after rupture, per cent of original section		16.9
Position of rupture		1″ from neck
Character of broken surface		granular 50 per cent, dull silky 50 per cent
Elongation of inch sections		″.07, ″.09*

No. 6518.

Marks, $\overset{A\ 2}{2\ C}$ M 15
Diameter, ".505.
Sectional area, .20 square inch.
Gauged length, 2".
Bruised specimen.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
15,000	.00055	.00020	....	....	
20,000	.00080	.00025	.00010	.00010	
21,000	.00085	.00005	....	....	
22,000	.00090	.00005	....	....	Elastic limit.
23,000	.00150	.00060	....	....	
24,000	.00210	.00060	....	....	
25,000	.00315	.00105	....	....	
26,000	.00435	.00120	....	....	
27,000	.00530	.00095	....	....	
28,000	.00625	.00095	....	....	
61,950	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	61,950
Elastic limit per square inch of original section	do...	22,000
Elongation per inch after rupture	inch..	.1300
Elongation per inch under strain at elastic limit	do...	.00090
Reduction in diameter at point of rupture	do...	.035
Reduction in area after rupture, per cent of original section		13.2
Position of rupture		".25 from neck
Character of broken surface		granular, with dull amorphous spot at the circumference
Elongation of inch sections		".14*, ".12

TABULATION OF STEEL SPECIMENS FROM 6-POUNDER AND 15-POUNDER GUN MOUNTS (STEMS 2″ LONG).

PIVOT SOCKETS, 6-POUNDER GUN MOUNTS, STEEL CASTINGS.

No. of test.	Marks.	Diameter.	Sectional area.	Elastic limit per square inch.	Tensile strength per square inch.	Elongation in 2 inches.	Contraction of area.	Appearance of fracture.	Elongation of inch sections.
		Inch.	*Sq. inch.*	*Pounds.*	*Pounds.*	*Per cent.*	*Per cent.*		″ ″
6453	A 25 P S 6	.505	.20	28,000	64,950	25.5	30.7	Silky	.27*, .24
6454	A 26 P S 6	.505	.20	30,000	64,900	22.5	27.4	Dull silky	.28*, .22
6455	A 27 P S 6	.505	.20	27,000	64,500	26.0	30.7	Fine granular 80 per cent, silky 20 per cent	.30*, .22
6456	A 28 P S 6	.505	.20	21,000	52,350	36.5	59.8	Silky	.29, .44*
6473	A 28 2 P S 6	.505	.20	20,000	51,450	29.5	40.3	.....do	.35*, .24
6457	A 29 P S 6	.505	.20	19,000	51,900	37.0	59.8	.....do	.41*, .33
6474	A 29 2 P S 6	.505	.20	24,000	50,900	35.0	54.6	.....do	.40*, .30
6612	A 30 P S 6	.505	.20	27,000	53,550	37.0	54.6	.....do	.30, .44*
6714	A 30 2 P S 6	.505	.20	28,000	51,300	30.5	40.3	Dull silky	.25, .36*
6746	A 31 2 P S 6	.505	.20	30,000	64,900	8.5	9.5	Granular 85 per cent, dull silky 15 per cent	.07, .10*
6712	A 32 P S 6	.505	.20	19,000	51,000	37.0	54.6	Silky	.26, .48*
6713	A 33 P S 6	.505	.20	20,000	56,400	32.5	43.3	.....do	.34, .31*
6715	A 34 P S 6	.505	.20	31,000	66,550	24.5	30.7	Dull silky, opened cracks along the stem	.28*, .21
6716	A 35 P S 6	.505	.20	31,000	66,000	25.0	30.7	Silky	.22, .28*
6747	A 36 P S 6	.505	.20	29,000	75,600	14.5	16.9	Granular 60 per cent, dull silky 40 per cent	.16*, .13
6748	A 37 P S 6	.505	.20	23,000	60,500	29.0	43.3	Silky	.28, .30*
6749	A 38 P S 6	.505	.20	28,000	75,050	20.5	23.9	Granular 85 per cent, dull silky 15 per cent	.18, .23*
6758	A 39 P S 6	.505	.20	25,000	68,050	14.5	16.9	Granular, silky spot at circumference	.16*, .13
6759	A 40 P S 6	.505	.20	25,000	67,550	20.5	20.5	.....do	.19, .22*

6760	A 41 P S 6	.505	.20	24,000	68,200	25.0	30.7	Granular 60 per cent, silky 40 per cent	.22, .28*
6761	A 42 P S 6	.505	.20	21,000	69,550	17.0	16.9	Granular, silky spot at circumference	.19*, .15
6781	A 42 2 P S 6	.505	.20	23,000	61,300	8.5	13.2	Granular, small spongy spot at circumference	.09, .08*
6762	A 43 P S 6	.505	.20	23,000	68,500	26.5	34.0	Silky 60 per cent, granular 40 per cent	.28*, .25*
6768	A 44 P S 6	.505	.20	26,000	72,550	18.0	20.5	Granular	.16, .20*
6782	A 45 P S 6	.505	.20	32,000	74,000	20.5	23.9	Granular, dull spot at circumference	.23*, .18
6783	A 46 P S 6	.505	.20	32,000	75,850	18.0	20.5	Granular, silky spot at circumference	.17, .19*
6784	A 47 P S 6	.505	.20	29,000	68,900	21.5	27.4	Granular 85 per cent, silky 15 per cent	.20, .23*
6785	A 48 P S 6	.505	.20	28,000	69,600	22.5	23.9	Granular, silky spot at the circumference	.21, .24*
6804	A 49 P S 6	.505	.20	23,000	67,900	25.0	30.7	Granular 50 per cent, silky 50 per cent	.18, .32*
6805	A 50 P S 6	.505	.20	27,000	75,100	17.5	20.5	Granular 80 per cent, silky 20 per cent	.16, .19*
6806	A 51 P S 6	.505	.20	33,000	69,650	25.0	27.4	Dull silky 60 per cent, granular 40 per cent	.24, .26*
6924	A 52 P S 6	.505	.20	36,000	75,900	19.0	27.4	Granular, silky spot at circumference	.23*, .15
6937	A 53 P S 6	.505	.20	26,000	66,550	21.0	23.9	....do	.23*, .19
6918	A 54 P S 6	.505	.20	26,000	66,300	23.5	27.4	Granular	.24, .23*
6938	A 55 P S 6	.505	.20	27,000	65,800	27.0	34.0	Silky	.24, .30*
6939	A 56 P S 6	.505	.20	31,000	72,500	24.5	30.7	Granular 60 per cent, silky 40 per cent	.22, .27*
6940	A 57 P S 6	.505	.20	34,000	84,000	18.5	20.5	Granular, silky spot at circumference	.19, .18*
6941	A 58 P S 6	.505	.20	24,000	69,450	25.0	34.0	....do	.29*, .21
6942	A 59 P S 6	.505	.20	27,000	71,000	23.5	30.7	....do	.27*, .20
6943	A 60 P S 6	.505	.20	34,000	77,700	23.0	34.0	....do	.24*, .22
6944	A 61 P S 6	.505	.20	29,000	75,900	18.0	20.5	....do	.20*, .16
6945	A 62 P S 6	.505	.20	27,000	69,100	21.5	23.9	Granular, dull flaky spot at circumference, opened cracks in surface of stem	.20, .23*
6946	A 63 P S 6	.505	.20	29,000	74,100	13.5	16.9	Granular, silky spot at circumference	.12, .15*
6986	A 64 P S 6	.505	.20	30,000	69,700	12.0	16.9	....do	.13*, .11
6977	A 65 P S 6	.505	.20	32,000	71,000	19.5	20.5	Silky oblique 30 per cent, granular 70 per cent	.21*, .18

TABULATION OF STEEL SPECIMENS FROM 6-POUNDER AND 15-POUNDER GUN MOUNTS (STEMS 2" LONG)—Continued.

AXLES, 6-POUNDER GUN MOUNTS, STEEL FORGINGS.

No. of test.	Marks.	Diameter.	Sectional area.	Elastic limit per square inch.	Tensile strength per square inch.	Elongation in 2 inches.	Contraction of area.	Appearance of fracture.	Elongation of inch sections.
		Inch.	*Sq. inch.*	*Pounds.*	*Pounds.*	*Per cent.*	*Per cent.*		" "
6590	A 21 A × 6	.505	.20	27,000	62,150	28.0	43.3	Silky	.31*, .25
6767	A 23 A × 6	.505	.20	35,000	65,300	32.5	57.2	Fine silky, cup shaped	.28, .37*
6901	A 26 A × 6	.505	.20	30,000	61,200	31.0	49.1	Silky	.30, .32*
6902	A 30 A × 6	.505	.20	33,000	64,100	32.0	49.1	.....do	.26, .38*
6903	A 31 A × 6	.505	.20	31,000	65,550	30.0	46.2	.....do	.25, .35*
6923	A 33 A × 6	.505	.20	24,000	59,100	34.0	57.2	.....do	.41*, .27

PISTON RODS, 6-POUNDER GUN MOUNTS, STEEL FORGINGS.

No. of test.	Marks.	Diameter.	Sectional area.	Elastic limit per square inch.	Tensile strength per square inch.	Elongation in 2 inches.	Contraction of area.	Appearance of fracture.	Elongation of inch sections.
6591	A 26 P R 6	.505	.20	35,000	85,500	22.5	30.7	Silky 60 per cent, granular 40 per cent	.25*, .20
6592	A 27 P R 6	.505	.20	34,000	83,150	21.5	27.4	Granular 80 per cent, silky 20 per cent	.25*, .18
6593	A 41 P R 6	.505	.20	34,000	85,400	21.5	27.4	Granular 70 per cent, silky 30 per cent	.22*, .21*
6594	A 54 P R 6	.505	.20	34,000	82,400	22.5	30.7	Dull silky, with granular spot at circumference	.22, .23*

PIVOT SOCKETS, 15-POUNDER GUN MOUNTS, STEEL CASTINGS.

No. of test.	Marks.	Diameter.	Sectional area.	Elastic limit per square inch.	Tensile strength per square inch.	Elongation in 2 inches.	Contraction of area.	Appearance of fracture.	Elongation of inch sections.
6464	A 1 2 P S 15	.505	.20	26,000	55,800	3.0	1.8	Granular, dull spot at circumference	.04*, .02
6465	A 2 2 P S 15	.505	.20	18,000	51,950	16.5	27.4	Dull silky, trace of granulation	.14, .19*
6480	A 27 3 P S 15	.505	.20	27,000	46,300	3.0	5.7	Granular 60 per cent, spongy 40 per cent	.05*, .01

6481	A 28 P S 15	.505	.20	27,000	58,200	5.5	9.5	Granular 80 per cent, spongy 20 per cent	.04, .07*
6482	A 30 2 P S 15	.505	.20	20,000	36,400	3.0	Broke at neck.	Granular and silky 50 per cent, seamy 50 per cent	.04, .02
6532	A 30 3 P S 15	.505	.20	22,000	49,600	6.5	13.2	Amorphous, spongy	.03, .10*
6483	A 31 P S 15	.505	.20	27,000	45,900	3.5	5.7	Granular 70 per cent, seamy 30 per cent	.04, .03*
6632	A 31 2 P S 15	.505	.20	32,000	74,390	13.5	15.2	Granular, radiating from a silky spot in circumference	.12, .15*
6451	A 33 P S 15	.505	.20	30,000	64,950	31.5	46.2	Silky	.27, .36*
6452	A 34 P S 15	.505	.20	34,000	73,400	15.5	16.9	Fine granular 80 per cent, dull silky 20 per cent	.16*, .15
6484	A 35 P S 15	.505	.20	28,000	61,450	27.0	30.7	Silky	.32*, .20
6485	A 36 P S 15	.505	.20	25,000	62,900	15.0	23.9	Silky, trace of granulation	.18*, .12
6486	A 37 P S 15	.505	.20	22,000	62,000	18.0	23.9	Granular 80 per cent, silky 20 per cent	.20*, .16
6513	A 38 P S 15	.505	.20	18,000	58,500	25.0	37.1	Silky, granular at center	.16, .34*
6487	A 39 P S 15	.505	.20	22,000	66,000	22.5	23.9	Granular, dull spot at circumference	.24*, .21
6488	A 40 P S 15	.505	.20	19,000	58,900	26.0	30.7	Silky 80 per cent, granular 20 per cent	.20, .32*
6516	A 40 2 P S 15	.505	.20	19,000	60,400	25.0	34.0	Silky	.22, .28*
6645	A 40 3 P S 15	.505	.20	26,000	48,000	6.0	9.5	Dull amorphous, spongy	.09*, .08
6514	A 41 P S 15	.505	.20	29,000	65,150	22.5	30.7	Dull silky	.23*, .22
6515	A 42 P S 15	.505	.20	20,000	60,100	18.0	20.5	Granular, dull flaky spot at circumference	.17, .19*
6533	A 43 P S 15	.505	.20	32,000	68,550	22.0	27.4	Dull amorphous, in part granular	.25*, .19
6570	A 44 P S 15	.505	.20	27,000	69,550	24.5	27.4	Granular 70 per cent, dull silky 30 per cent	.21, .28*
6595	A 45 P S 15	.505	.20	23,000	62,550	25.5	30.7	Dull gray, amorphous	.27*, .24
6534	A 46 P S 15	.505	.20	29,000	70,100	18.0	20.5	Granular 80 per cent, silky 20 per cent	.15, .21*
6535	A 47 P S 15	.505	.20	23,000	60,500	22.0	27.4	Dull amorphous 70 per cent, granular 30 per cent	.25*, .19
6571	A 48 P S 15	.505	.20	25,000	69,450	19.5	20.5	Granular, silky spot at circumference	.20*, .19
6572	A 49 P S 15	.505	.20	21,000	64,800	19.0	20.5	Granular 60 per cent, dull silky 40 per cent	.20*, .18
6536	A 50 P S 15	.505	.20	26,000	71,500	16.0	16.9	Granular, silky spot at circumference	.15, .17*
6537	A 51 P S 15	.505	.20	24,000	64,450	19.5	20.5	Granular	.17, .22*

TABULATION OF STEEL SPECIMENS FROM 6-POUNDER AND 15-POUNDER GUN MOUNTS (STEMS 2″ LONG)—Continued.

PIVOT SOCKETS, 15-POUNDER GUN MOUNTS, STEEL CASTINGS—Continued.

No. of test.	Marks.	Diameter.	Sectional area.	Elastic limit per square inch.	Tensile strength per square inch.	Elongation in 2 inches.	Contraction of area.	Appearance of fracture.	Elongation of inch sections.
		Inch.	*Sq. inch.*	*Pounds.*	*Pounds.*	*Per cent.*	*Per cent.*		″ ″
6538	A 52 P S 15	.505	.20	23,000	61,550	19.0	23.9	Dull amorphous 80 per cent, granular 20 per cent	.18, .20*
6539	A 53 P S 15	.505	.20	25,000	70,050	18.5	20.5	Dull amorphous, granular at circumference	.16, .21
6540	A 54 P S 15	.505	.20	25,000	68,550	18.0	20.5	Granular 60 per cent, silky 40 per cent	.15, .21*
6541	A 55 P S 15	.505	.20	27,000	70,050	17.0	16.9	Granular, silky spot at circumference	.16, .18*
6542	A 56 P S 15	.505	.20	25,000	73,000	15.5	16.9	.....do	.14, .17*
6633	A 56 2 P S 15	.505	.20	35,000	72,350	20.5	20.5	Granular 60 per cent, silky 40 per cent	.19, .22*
6543	A 57 P S 15	.505	.20	24,000	65,400	19.0	27.4	Dull amorphous, with granular metal interspersed	.26*, .12
6544	A 58 P S 15	.505	.20	26,000	72,100	17.0	20.5	Granular, silky spot at circumference	.18*, .16
6545	A 59 P S 15	.505	.20	26,000	72,000	15.5	16.9	.....do	.14, .17*
6634	A 59 2 P S 15	.505	.20	31,000	72,050	18.5	23.9	Granular 60 per cent, dull silky 40 per cent	.16, .21*
6546	A 60 P S 15	.505	.20	19,000	56,000	26.0	30.7	Dull amorphous	.29*, .23
6635	A 60 2 P S 15	.505	.20	20,000	55,200	28.0	40.8	Dull silky, trace of granulation	.20, .36*
6547	A 61 P S 15	.505	.20	25,000	68,800	18.0	23.9	Granular 50 per cent; dull amorphous 50 per cent	.16, .20*
6548	A 62 P S 15	.505	.20	23,000	69,850	19.0	20.5	Granular	.18, .20*
6549	A 63 P S 15	.505	.20	19,000	50,900	21.0	27.4	Dull amorphous 80 per cent, coarse granular 20 per cent	.23*, .19
6636	A 63 2 P S 15	.505	.20	19,000	51,550	25.5	37.1	Dull silky, trace of granulation	.32*, .19
6573	A 64 P S 15	.505	.20	35,000	68,100	22.5	23.9	Dull silky	.24*, .21
6574	A 65 P S 15	.505	.20	25,000	65,900	21.5	27.4	Granular 20 per cent, dull amorphous 80 per cent	.24*, .19
6596	A 66 P S 15	.505	.20	35,000	67,350	21.5	23.9	Gray amorphous	.20, .23*

6597	A 67 P S 15	.505	.20	38,000	69,900	20.0	23.9	Gray amorphous 70 per cent, granular 30 per cent	.20*, .20*
6769	A 68 P S 15	.505	.20	22,000	64,900	24.0	27.4	Silky, oblique	.22, .26*
6646	A 69 P S 15	.505	.20	27,000	54,350	34.5	49.1	Silky	.40*, .19
6900	A 69 P S 15	.505	.20	27,000	54,050	32.0	46.2	....do	.30, .34*
6647	A 70 P S 15	.505	.20	33,000	65,600	17.5	23.9	Dull amorphous, with trace of granulation	.16*, .19*
6648	A 71 P S 15	.505	.20	28,000	66,600	24.5	34.0	Granular 50 per cent, dull silky 50 per cent	.30*, .19
6649	A 72 P S 15	.505	.20	31,000	63,500	19.5	20.5	Granular, silky spot at circumference	.20*, .19
6650	A 73 P S 15	.505	.20	21,000	70,100	18.5	23.9	Silky, trace of granulation	.17, .20*
6770	A 74 P S 15	.505	.20	25,000	73,600	18.0	20.5	Granular 70 per cent, dull silky 30 per cent	.20*, .16
6771	A 75 P S 15	.505	.20	21,000	55,600	12.5	13.2	Coarse granular, silvery luster	.11, .14*
6797	A 75 2 P S 15	.505	.20	19,000	55,600	15.0	16.9	Coarse granular	.16*, .14
6772	A 76 P S 15	.505	.20	22,000	73,400	20.5	20.5	Granular	.19, .22*
6773	A 77 P S 15	.505	.20	23,000	64,100	27.5	34.0	Silky 50 per cent, granular 50 per cent	.32*, .23
6774	A 78 P S 15	.505	.20	20,000	55,100	32.5	46.2	Silky	.23, .42
6997	A 78 2 P S 15	.505	.20	26,000	72,100	25.0	34.0	Granular 60 per cent, dull silky 40 per cent	.21, .29*
6775	A 79 P S 15	.505	.20	17,000	49,850	35.5	57.2	Silky	.28, .48*
6776	A 80 P S 15	.505	.20	19,000	59,050	27.0	37.1	Silky, trace of granulation	.20, .34*
6873	A 81 2 P S 15	.505	.20	38,000	74,150	19.0	27.4	Dull gray amorphous	.13, .25*
6874	A 80 P S 15	.505	.20	27,000	74,550	20.5	27.4	Granular 60 per cent, dull silky 40 per cent	.18, .28*
6855	A 82 P S 15	.505	.20	30,000	75,950	19.5	20.5	Granular 80 per cent, silky 20 per cent	.21*, .18
6875	A 83 P S 15	.505	.20	24,000	71,950	17.5	20.5	Dull amorphous, oblique	.20*, .15
6876	A 84 P S 15	.505	.20	26,000	74,450	17.5	20.5	Granular 60 per cent, silky 40 per cent	.16, .19*
6856	A 85 P S 16	.505	.20	29,000	77,450	18.5	16.9	Granular, silky spot at circumference	.15*, .12
6857	A 86 P S 16	.505	.20	27,000	78,600	17.5	20.5	....do	.16, .19*
6858	A 87 P S 15	.505	.20	24,000	65,500	27.0	37.1	Silky	.21, .33*
6877	A 88 P S 15	.505	.20	30,000	76,200	19.0	20.5	Granular, dull silky spot at circumference	.19, .19*

TABULATION OF STEEL SPECIMENS FROM 6-POUNDER AND 15-POUNDER GUN MOUNTS (STEMS 2″ LONG)—Continued.

PIVOT SOCKETS, 15-POUNDER GUN MOUNTS, STEEL CASTINGS—Continued.

No. of test.	Marks.	Diameter.	Sectional area.	Elastic limit per square inch.	Tensile strength per square inch.	Elongation in 2 inches.	Contraction of area.	Appearance of fracture.	Elongation of inch sections.
		Inch.	*Sq. inch.*	*Pounds.*	*Pounds.*	*Per cent.*	*Per cent.*		″ ″
6878	A 89 P S 15	.505	.20	25,000	76,000	18.0	23.9	Granular	.20*, .16
6859	A 90 P S 15	.505	.20	28,000	75,700	20.5	23.9	Granular, dull flaky spot at circumference	.18, .23*
6860	A 91 P S 15	.505	.20	25,000	70,500	21.0	23.9	Granular, silky spot a circumference	.22*, .20
6861	A 92 P S 15	.505	.20	19,000	55,400	26.5	49.1	Silky	.20, .33*
6862	A 93 P S 15	.505	.20	17,000	51,600	36.5	51.9	Dull silky	.30, .43*
6998	A 93 2 P S 15	.505	.20	29,000	71,100	21.0	27.4	Granular, silky spot at circumference	.20, .22*
6819	A 95 P S 15	.505	.20	24,000	64,050	27.5	37.1	Silky 70 per cent, granular 30 per cent	.33*, .22
6863	A 96 P S 15	.505	.20	20,000	60,900	30.0	46.2	Silky	.21, .39*
6999	A 96 2 P S 15	.505	.20	29,000	80,500	18.5	20.5	Granular 70 per cent, silky 30 per cent	.18, .19*
6820	A 97 P S 15	.505	.20	23,000	70,100	23.0	30.7	Fine granular, silky spot at circumference	.20, .26*
6821	A 98 P S 15	.505	.20	27,000	58,100	5.0	5.7	Granular, seam near circumference	.04, .06*
7186	A 98 2 P S 15	.505	.20	32,000	71,500	20.5	20.5	Granular, silky spot at circumference	.20, .21*
6822	A 99 2 P S 15	.505	.20	[1]21 000	69,500	22.5	27.4	Granular 60 per cent, dull silky 40 per cent	.26*, .19
7166	A 99 2 P S 15	.505	.20	31,000	63,400	22.5	30.7	Silky	.27*, .18
6850	A 100 P S 15	.505	.20	21,000	62,550	19.0	20.5	Granular, flaky spot at circumference	.20*, .18
7000	A 100 2 P S 15	.505	.20	23,000	66,450	27.0	34.0	Dully silky, oblique	.24, .30*
6832	A 101 P S 15	.505	.20	23,000	69,400	23.0	27.4	Granular 80 per cent, silky 20 per cent	.20, .26*
6864	A 102 P S 15	.505	.20	21,000	65,550	28.5	40.3	Dull silky, oblique	.22, .35*
7001	A 102 2 P S 15	.505	.20	29,000	75,500	14.0	13.2	Granular, silky spot at circumference	.15*, .13

6865	A 103 P S 15	.505	.20	20,000	65,250	26.0	37.1	Granular 60 per cent, silky 40 per cent	.18, .34*
7002	A 103 2 P S 15	.505	.20	24,000	69,800	27.0	34.0	Granular 60 per cent, silky flaky 40 per cent	.23, .31*
6866	A 104 P S 15	.505	.20	24,000	66,900	23.0	23.9	Granular	.22, .24*
6867	A 105 P S 15	.505	.20	20,000	65,500	25.0	34.0	Silky, granular center	.22, .28*
6879	A 106 P S 15	.505	.20	28,000	72,600	23.5	34.0	Granular 60 per cent, silky 40 per cent	.26*, .21
6880	A 107 P S 15	.505	.20	25,000	69,500	22.5	27.4	Granular, silky spot at circumference	.25*, .20
6881	A 108 P S 15	.505	.20	25,000	72,950	22.5	27.4	Granular	.19, .26*
6882	A 109 P S 15	.505	.20	28,000	70,900	25.0	27.4	Granular 60 per cent, silky 40 per cent	.25*, .25*
6883	A 110 P S 15	.505	.20	27,000	66,500	25.0	30.7	Granular 70 per cent, silky 30 per cent	.29*, .21
6884	A 111 P S 15	.505	.20	35,000	82,000	19.0	20.5	Granular	.17, .21
6949	A 112 P S 15	.505	.20	26,000	72,900	22.0	27.4	Granular, silky spot at circumference	.23*, .21
7003	A 112 P S 15	.505	.20	24,000	73,450	15.0	16.9	Granular 80 per cent, silky 20 per cent	.13, .17*
6971	A 113 P S 15	.505	.20	28,000	65,350	18.0	16.9	Granular, dull silky spot at circumference	.18*, .18
6966	A 114 P S 15	.505	.20	28,000	68,450	11.5	13.2	.....do	.11, .12*
6967	A 115 P S 15	.505	.20	24,000	68,900	25.0	30.7	Granular 70 per cent, dull silky 30 per cent	.27*, .23
6968	A 116 P S 15	.505	.20	28,000	72,500	19.5	20.5	Granular, silky spot at circumference	.20*, .19
6972	A 117 P S 15	.505	.20	32,000	77,600	23.5	27.4	.....do	.24*, .23
6969	A 118 P S 15	.505	.20	29,000	78,550	9.5	13.2	.....do	.10*, .09
7187	A 118 2 P S 15	.505	.20	24,000	68,950	13.5	16.9	.....do	.15*, .12
7012	A 119 P S 15	.505	.20	30,000	71,450	15.0	16.9	Granular, dull spot at circumference	.15*, .15
7188	A 119 2 P S 15	.505	.20	30,000	71,450	21.5	23.9	Granular 90 per cent, silky 10 per cent	.21, .22*
7025	A 120 P S 15	.505	.20	30,000	68,400	20.0	20.5	Granular 80 per cent, silky 20 per cent	.22*, .18
7013	A 121 P S 15	.505	.20	26,000	72,900	20.0	23.9	Granular, dull spot at circumference	.26*, .14
7014	A 122 P S 15	.505	.20	30,000	74,000	20.0	23.9	Granular 80 per cent, silky 20 per cent	.22*, .18
7015	A 124 P S 15	.505	.20	29,000	66,900	19.5	20.5	Granular 75 per cent, dull silky 25 per cent	....

[1] Approximate.

TABULATION OF STEEL SPECIMENS FROM 6-POUNDER AND 15-POUNDER GUN MOUNTS (STEMS 2″ LONG)—Continued.

PIVOT SOCKETS, 15-POUNDER GUN MOUNTS, STEEL CASTINGS—Continued.

No. of test.	Marks.	Diameter.	Sectional area.	Elastic limit per square inch.	Tensile strength per square inch.	Elongation in 2 inches.	Contraction of area.	Appearance of fracture.	Elongation of inch sections.
		Inch.	*Sq. inch.*	*Pounds.*	*Pounds.*	*Per cent.*	*Per cent.*		″ ″
7016	A 125 P S 15	.505	.20	29,000	62,350	10.0	13.2	Granular 90 per cent, dull silky 10 per cent	.10*, .10
7026	A 126 P S 15	.505	.20	30,000	65,100	15.0	13.2	Granular 60 per cent, silky 40 per cent	.14, .16*
7017	A 127 P S 15	.505	.20	32,000	81,500	14.5	16.9	Granular, dull spot at circumference	.14, .15*
7136	A 128 P S 15	.505	.20	22,000	62,400	16.5	16.9	Granular, silky spot at circumference	.16, .17*
7189	A 128 2 P S 15	.505	.20	32,000	71,500	16.0	16.9	Granular 80 per cent, silky 20 per cent	.17*, .15
7126	A 129 P S 15	.505	.20	27,000	70,500	17.5	20.5	Granular 90 per cent, silky 10 per cent	.16, .19*
7127	A 130 P S 15	.505	.20	29,000	69,900	16.0	16.9	Granular 60 per cent, silky 40 per cent	.15, .17*
7128	A 131 P S 15	.505	.20	32,000	71,450	14.5	16.9	Granular, silky spot at circumference	.13, .16*
7129	A 132 P S 15	.505	.20	25,000	69,500	16.0	16.9	Granular	.18*, .14
7137	A 133 P S 15	.505	.20	21,000	67,450	11.0	13.2	.....do	.11, .11*
7150	A 134 P S 15	.505	.20	29,000	65,100	14.5	13.2	Dull gray amorphous, trace of crystallization	.16*, .13
7138	A 136 P S 15	.505	.20	32,000	71,500	18.0	16.9	Granular, silky spot at circumference	.18*, .18
7167	A 139 P S 15	.505	.20	33,000	73,000	18.5	20.5	.....do	.16, .21*
7156	A 140 P S 15	.505	.20	21,000	61,950	10.0	13.2	Granular, intermingled with silky metal	.09, .11*
7157	A 141 P S 15	.505	.20	26,000	64,850	9.5	9.5	Granular, silky spot at circumference	.09, .10*
7151	A 142 P S 15	.505	.20	31,000	72,300	21.5	20.5	.....do	.26*, .17
7158	A 143 P S 15	.505	.20	27,000	68,000	19.0	16.9	.....do	.19, .19*
7139	A 144 P S 15	.505	.20	20,000	60,400	11.0	13.2	.....do	.11, .11*
7140	A 145 P S 15	.505	.20	21,000	64,000	17.0	20.5	Granular	.18, .16*

7141	A 146 P S 15	.505	.20	31,000	69,500	19.5	20.5	Granular, silky spot at circumference	.19, .20*
7142	A 147 P S 15	.505	.20	28,000	66,900	15.5	20.5	....do	.15, .16*
7159	A 148 P S 15	.505	.20	30,000	70,900	16.5	16.9	Granular 60 per cent, silky 40 per cent	.15, .18*
7152	A 149 P S 15	.505	.20	28,000	68,350	18.0	16.9	Granular, with irregular section of silky metal across surface	.16, .20*
7184	A 150 P S 15	.505	.20	[1]24,000	64,900	11.0	13.2	Granular, silky spot at circumference	.10, .12*
7185	A 151 P S 15	.505	.20	23,000	53,950	3.5	5.7	Granular, silvery luster 60 per cent, silky flaky 40 per cent	.03, .04*

PIVOT YOKES, 15-POUNDER GUN MOUNTS, STEEL CASTINGS.

6613	S 1 P Y 15	.505	.20	28,000	59,100	18.0	20.5	Dull gray, amorphous	.12, .14*
6765	S 4 P Y 15	.505	.20	25,000	75,100	19.5	27.4	Granular 60 per cent, silky 40 per cent	.24*, .15
6779	S 5 P Y 15	.505	.20	33,000	77,100	19.5	23.9	Granular, silky spot at circumference	.18, .21*
6796	S 6 P Y 15	.505	.20	30,000	72,800	23.5	27.4	Granular 80 per cent, silky 20 per cent	.21, .26*
6815	S 7 P Y 15	.505	.20	20,000	65,000	16.5	16.9	Granular	.17*, .16
6848	S 7 2 P Y 15	.505	.20	27,000	70,550	22.5	30.7	Granular 60 per cent, silky 40 per cent	.25*, .20
6816	S 8 2 P Y 15	.505	.20	33,000	72,000	26.5	34.0	Fine granular, silky spot at circumference	.28*, .25
6817	S 9 P Y 15	.505	.20	28,000	69,600	23.0	23.9	....do	.23, .23*
6818	S 10 P Y 15	.505	.20	27,000	71,000	21.5	27.4	Granular, silky spot at circumference	.19, .24*
6833	S 11 P Y 15	.505	.20	28,000	72,500	20.0	23.9	....do	.22, .18
6834	S 12 P Y 15	.505	.20	29,000	71,550	18.0	27.4	....do	.23*, .13
6868	S 15 P Y 15	.505	.20	33,000	71,500	18.0	20.5	Fine granular, silky spot at circumference	.19*, .17
6887	S 16 P Y 15	.505	.20	32,000	71,000	19.5	20.5	Granular 60 per cent, silky 40 per cent	.18, .21*
6888	S 17 P Y 15	.505	.20	20,000	62,400	16.5	16.9	Granular	.16, .17*
6907	S 17 2 P Y 15	.505	.20	32,000	69,450	10.0	9.5	Granular, silky spot at circumference	.10, .10*
6920	S 17 3 P Y 15	.505	.20	31,000	74,000	25.0	34.0	Granular 60 per cent, silky 40 per cent	.28*, .22

[1] Approximate.

TABULATION OF STEEL SPECIMENS FROM 6-POUNDER AND 15-POUNDER GUN MOUNTS (STEMS 2″ LONG)—Continued.

PIVOT YOKES, 15-POUNDER GUN MOUNTS, STEEL CASTINGS—Continued.

No. of test.	Marks.	Diameter.	Sectional area.	Elastic limit per square inch.	Tensile strength per square inch.	Elongation in 2 inches.	Contraction of area.	Appearance of fracture.	Elongation of inch sections.
		Inch.	*Sq. inch.*	*Pounds.*	*Pounds.*	*Per cent.*	*Per cent.*		″ ″
6890	S 18 P Y 15	.505	.20	26,000	66,000	11.0	13.2	Granular	.10, .12*
6904	S 18 2 P Y 15	.505	.20	34,000	76,300	24.5	30.7	Silky, trace of granulation	.23, .26*
6889	S 19 2 P Y 15	.505	.20	34,000	77,000	22.5	23.9	Granular 70 per cent, silky 30 per cent	.20, .25*
6891	S 20 P Y 15	.505	.20	32,000	79,100	20.0	23.9	Granular, silky spot at circumference	.17, .23*
6892	S 21 P Y 15	.505	.20	31,000	73,050	25.5	34.0	Silky 70 per cent, granular 30 per cent	.30*, .21
6893	S 22 P Y 15	.505	.20	34,000	75,400	24.0	34.0	....do	.21, .27*
6894	S 23 P Y 15	.505	.20	31,000	78,600	25.0	30.7	Silky 60 per cent, granular 40 per cent	.20, .35*
6905	S 24 P Y 15	.505	.20	33,000	72,500	26.5	34.0	Granular 55 per cent, silky 45 per cent	.28*, .25
6906	S 25 P Y 15	.505	.20	32,000	78,550	21.5	27.4	Granular	.19, .24*
6914	S 26 P Y 15	.505	.20	30,000	77,000	22.5	30.7	Granular, silky spot at circumference	.24*, .21
6919	S 27 P Y 15	.505	.20	31,000	75,600	20.0	23.9	....do	.21*, .19
6915	S 28 P Y 15	.505	.20	30,000	77,600	21.0	23.9	....do	.20, .22*
6921	S 29 P Y 15	.505	.20	30,000	73,600	21.0	27.4	....do	.19, .23*
6925	S 30 P Y 15	.505	.20	32,000	76,550	20.5	23.9	Granular, silky spot	.19, .22*
6927	S 31 P Y 15	.505	.20	37,000	87,100	19.5	23.9	Fine granular	.22*, .17
6928	S 32 P Y 15	.505	.20	29,000	70,300	17.5	20.5	Granular, silvery luster	.19*, .16
6929	S 33 P Y 15	.505	.20	30,000	79,500	17.5	20.5	Granular, silky spot at circumference	.19*, .16
6930	S 34 P Y 15	.505	.20	30,000	76,450	19.0	23.9	....do	.17, .21*
6931	S 35 P Y 15	.505	.20	27,000	64,000	10.5	18.2	Granular 80 per cent, silky 20 per cent	.10, .11*

6964	S 35 2 P Y 15	.505	.20	29,000	77,400	19.0	20.5	Granular, silky spot at circumference	.21*, .17
6978	S 35 3 P Y 15	.505	.20	38,000	88,600	14.0	13.2	Fine granular	.16*, .12
6947	S 36 P Y 15	.505	.20	28,000	73,100	18.0	20.5	Granular, silky spot at circumference	.19*, .17
6965	S 38 P Y 15	.505	.20	31,000	73,500	19.0	20.5	....do	.20*, .18
6950	S 40 P Y 15	.505	.20	30,000	67,250	18.5	20.5	....do	.20*, .17
6951	S 42 P Y 15	.505	.20	30,000	67,900	15.5	16.9	Granular 60 per cent, silky 40 per cent	.14, .17*
6952	S 43 P Y 15	.505	.20	30,000	73,900	18.5	20.5	Granular 70 per cent, silky 30 per cent	.18, .19*
6973	S 45 P Y 15	.505	.20	35,000	69,550	5.5	9.5	Granular, cavity ″.08 diameter at circumference	.05, .06*
6993	S 45 P Y 15	.505	.20	35,000	85,600	18.5	20.5	Granular, silky spot at circumference	.20*, .17
6983	S 47 P Y 15	.505	.20	33,000	76,550	7.0	9.5	....do	.06, .08*
6992	S 47 2 P Y 15	.505	.20	33,000	71,000	12.0	13.2	....do	.11, .13*
7020	S 47 3 P Y 15	.505	.20	36,000	79,900	16.0	16.9	....do	.16, .16*
6984	S 49 P Y 15	.505	.20	36,000	78,500	9.0	9.5	....do	.10*, .08
6994	S 49 2 P Y 15	.505	.20	25,000	69,100	23.5	27.4	....do	.25*, .22
6988	S 53 P Y 15	.505	.20	36,000	85,600	12.5	13.2	....do	.11, .14*
7006	S 53 2 P Y 15	.505	.20	32,000	74,050	21.0	23.9	Granular, silky, oblique spot near circumference. Opened cracks in stem	.20, .22*
6989	S 55 P Y 15	.505	.20	39,000	75,100	6.5	9.5	Granular, dull, silky spot at circumference	.06, .07*
7007	S 55 P Y 15	.505	.20	30,000	68,000	22.5	27.4	Granular 60 per cent, silky 40 per cent	.20, .25*
6991	S 56 P Y 15	.505	.20	38,000	83,100	15.0	20.5	....do	.17*, .13
6990	S 57 P Y 15	.505	.20	37,000	79,000	15.0	16.9	Granular 80 per cent, silky 20 per cent	.14, .16*
7008	S 62 P Y 15	.505	.20	39,000	96,700	15.0	16.9	Granular, silky spot at circumference	.16*, .14
7083	S 62 2 P Y 15	.505	.20	29,000	71,100	16.5	20.5	....do	.18*, .15
7009	S 63 P Y 15	.505	.20	32,000	66,500	24.5	27.4	Silky, 50 per cent of surface interspersed with fine granulation	.23, .26*
7018	S 65 P Y 15	.505	.20	31,000	70,000	10.0	13.2	Granular, dull spot at circumference	.10, .10*
7122	S 65 2 P Y 15	.505	.20	29,000	69,900	21.0	20.5	Granular, silky spot at circumference	.22*, .20
7021	S 66 P Y 15	.505	.20	33,000	72,050	17.5	16.9	....do	.18*, .17

TABULATION OF STEEL SPECIMENS FROM 6-POUNDER AND 15-POUNDER GUN MOUNTS (STEMS 2″ LONG)—Continued.

PIVOT YOKES, 15-POUNDER GUN MOUNTS, STEEL CASTINGS—Continued.

No. of test.	Marks.	Diameter.	Sectional area.	Elastic limit per square inch.	Tensile strength per square inch.	Elongation in 2 inches.	Contraction of area.	Appearance of fracture.	Elongation of inch sections.
		Inch.	*Sq. inch.*	*Pounds.*	*Pounds.*	*Per cent.*	*Per cent.*		″ ″
7019	S 67 P Y 15	.505	.20	28,000	69,900	14.0	16.9	Granular, dull spot at circumference	.13, .15*
7123	S 67 2 P Y 15	.505	.20	30,000	68,950	12.0	13.2	Granular, silky spot at circumference	.10, .14*
7194	S 67 3 P Y 15	.505	.20	23,000	66,450	17.5	20.5	Granular, silvery luster, silky spot at circumference	.16, .19*
7022	S 69 P Y 15	.505	.20	31,000	71,600	21.0	20.5	Granular 60 per cent, dull silky 40 per cent	.24*, .18
7023	S 70 P Y 15	.505	.20	24,000	61,800	16.5	20.5	Silky, interspersed with granular metal	.19*, .14
7084	S 71 P Y 15	.505	.20	33,000	73,400	13.0	16.9	Granular, silky spot at circumference	.12, .14*
7168	S 71 2 P Y 15	.505	.20	35,000	75,950	19.0	20.5	.....do	.19*, .19
7077	S 73 P Y 15	.505	.20	31,000	71,700	12.5	13.2	.....do	.11, .14*
7169	S 73 2 P Y 15	.505	.20	25,000	70,950	21.5	20.5	Granular 50 per cent, silky 50 per cent	.23*, .20
7085	S 74 P Y 15	.505	.20	29,000	65,100	9.5	13.2	Granular, silky spot at circumference. Opened cracks along the stem	.09, .10*
7174	S 74 2 P Y 15	.505	.20	29,000	67,000	23.5	27.4	Granular, silky spot at circumference	.21, .26*
7073	S 75 P Y 15	.505	.20	31,000	73,050	10.0	13.2	.....do	.09, .11*
7165	S 75 P Y 15	.505	.20	31,000	69,000	16.0	16.9	Granular 75 per cent, silky 25 per cent	.15, .17*
7086	S 76 P Y 15	.505	.20	32,000	74,650	16.5	20.5	Granular 70 per cent, silky 30 per cent	.15, .18*
7087	S 77 P Y 15	.505	.20	32,000	72,050	12.0	16.9	Silky 60 per cent, granular 40 per cent	.13*, .11
7175	S 77 2 P Y 15	.505	.20	32,000	72,500	18.0	20.5	Silky 85 per cent, granular 15 per cent	.18, .18*
7176	S 77 2 P Y 15	.505	.20	24,000	64,800	25.0	30.7	Silky	.20, .30*
7160	S 78 P Y 15	.505	.20	28,000	68,900	10.0	16.9	Granular 60 per cent, dull silky 40 per cent	.11*, .09
7195	S 78 2 P Y 15	.505	.20	27,000	66,500	23.5	27.4	Granular 50 per cent, silky 50 per cent	.19, .28*

.7124	S 79 P Y 15	.505	.20	30,000	66,500	10.0	13.2	Granular, silky spot at circumference, with cavity	.10*, .10
7125	S 80 P Y 15	.505	.20	[1]29,000	66,400	6.5	9.5	Granular 80 per cent, silky 20 per cent	.07*, .06
7177	S 80 2 P Y 15	.505	.20	28,000	70,500	21.0	23.9	Granular, silky spot at circumference	.22*, .20
7161	S 83 P Y 15	.505	.20	27,000	69,950	16.5	49.1	.....do	.17*, .16
7147	S 84 P Y 15	.505	.20	28,000	69,450	12.0	13.2	Granular 80 per cent, silky 20 per cent	.11, .13*
7178	S 86 P Y 15	.505	.20	31,000	70,400	12.0	13.2	Granular, silky spot at circumference	.11, .13*
7196	S 86 2 P Y 15	.505	.20	24,000	66,400	19.5	23.9	Granular 60 per cent, silky 40 per cent	.22*. .17
7204	S 88 P Y 15	.505	.20	30,000	63,900	7.5	9.5	Granular 85 per cent, silky 15 per cent	.07, .08*
7197	S 90 P Y 15	.505	.20	31,000	65,850	9.5	13.2	Dull silky 90 per cent, granular 10 per cent	.12*. .07
7198	S 91 P Y 15	.505	.20	31,000	69,500	14.5	16.9	Granular, silky spot at circumference	.15*, .14
7199	S 93 P Y 15	.505	.20	30,000	72,500	16.5	16.9	Granular 85 per cent, silky 15 per cent	.17, .16*
7200	S 94 P Y 15	.505	.20	31,000	73,900	15.0	16.9	Granular 90 per cent, silky 10 per cent	.15*, 15

INNER BASES 15-POUNDER GUN MOUNTS, STEEL CASTINGS.

6447	A 26 I B 15	.505	.20	32,000	64,050	29.0	46.2	Silky	.25, .33*
6446	A 27 I B 15	.505	.20	25,000	51,600	6.5	9.5	Granular, spongy spot at circumference	.05, .08*
6448	A 29 I B 15	.505	.20	29,000	67,050	21.5.	30.7	Dull amorphous	.21, .22*
6976	A 29 3 I B 15	.505	.20	28,000	74,100	21.0	20.5	Dull silky 60 per cent, granular 40 per cent	.22*, .20
6449	A 30 I B 15	.505	.20	33,000	66,950	23.5	30.7	Silky	.29*, .18
6450	A 31 I B 15	.505	.20	21,000	52,850	35.5	59.8	.....do	.45*. .26
6475	A 31 2 I B 15	.505	.20	24,000	52,450	37.5	64.6	.....do	.52*, .23
6517	A 31 3 I B 15	.505	.20	19,000	48,550	18.5	34.0	Dull amorphous, spongy	.13, .24*
6476	A 32 I B 15	.505	.20	23,000	63,900	23.5	34.0	Granular 70 per cent, silky 30 per cent	.20, .27*
6477	A 33 I B 15	.505	.20	22,000	62,450	23.0	34.0	Granular 60 per cent, silky 40 per cent	.18, .28*

[1] Approximate.

TABULATION OF STEEL SPECIMENS FROM 6-POUNDER AND 15-POUNDER GUN MOUNTS (STEMS 2″ LONG)—Continued.

INNER BASES, 15-POUNDER GUN MOUNTS, STEEL CASTINGS—Continued.

No. of test.	Marks.	Diameter.	Sectional area.	Elastic limit per square inch.	Tensile strength per square inch.	Elongation in 2 inches.	Contraction of area.	Appearance of fracture.	Elongation of inch sections.
		Inch.	*Sq. inch.*	*Pounds.*	*Pounds.*	*Per cent.*	*Per cent.*		″ ″
6478	A 34 I B 15	.505	.20	22,000	62,950	24.5	27.4	Granular, dull spot at circumference	.21, .28*
6479	A 35 I B 15	.505	.20	22,000	64,450	21.0	23.9	Granular 90 per cent, silky 10 per cent	.22*, .20
6737	A 36 I B 15	.505	.20	30,000	70,500	22.0	27.4	Granular, dull silky spot at circumference	.25*. .19
6738	A 37 I B 15	.505	.20	25,000	62,600	29.0	37.1	Silky	.26, .32*
6739	A 38 I B 15	.505	.20	30,000	67,500	25.0	30.7	Silky, trace of granulation	.23, .27*
6740	A 39 I B 15	.505	.20	19,000	57,500	26.5	30.7	Granular 60 per cent, dull amorphous 40 per cent	.31*, .22
6922	A 39 2 I B 15	.505	.20	47,000	70,500	16.0	20.5	Dull gray, amorphous	.17*, .15
6802	A 40 I B 15	.505	.20	24,000	64,350	20.5	23.9	Granular	.18, .23*
6849	A 41 I B 15	.505	.20	29,000	69,050	18.0	20.5	Granular 55 per cent, dull silky 45 per cent	.16, .20*
6741	A 42 I B 15	.505	.20	22,000	66,200	20.5	27.4	Granular 50 per cent, dull amorphous 50 per cent	.17, .27*
6637	A 43 I B 15	.505	.20	24,000	68,700	18.0	20.5	Granular 60 per cent, dull amorphous 40 per cent	.19*, .17
6717	A 43 I B 15	.505	.20	27,000	67,900	16.5	16.9	Granular 60 per cent, dull silky 40 per cent	.18*, .15
6738	A 44 I B 15	.505	.20	28,000	72,600	18.5	20.5	Dull amorphous 20 per cent, granular 80 per cent	.22*, .15
6639	A 45 I B 15	.505	.20	30,000	66,000	15.0	16.9	Dull amorphous, trace of granulation	.17*, .13
6718	A 45 I B 15	.505	.20	33,000	65,600	15.3	23.9	Dull amorphous	.20, .26*
6780	A 46 I B 15	.505	.20	33,000	65,600	23.0	27.4	Silky	.25*, .21
6742	A 47 I B 15	.505	.20	25,000	50,100	39.5	66.9	Silky, cup shaped	.28, .51*
6766	A 47 I B 15	.505	.20	25,000	49,100	41.0	69.2	.....do	.52*, .30
6980	A 47 2 I B 15	.505	.20	28,000	70,050	23.0	27.4	Granular, silky spot at circumference	.25*, .21

6803	A 48 I B 15	.505	.20	29,000	79,150	19.0	23.9	Granular	.17, .21*
6823	A 49 I B 15	.505	.20	19,000	51,500	36.5	59.8	Dull silky	.25, .48*
6981	A 49 2 I B 15	.505	.20	20,000	60,300	28.0	30.7	Dull amorphous, trace of granulation	.18, .28*
7038	A 49 3 I B 15	.505	.20	38,000	84,000	16.0	16.9	Granular, silky spot at circumference	.14, .18*
6824	A 50 I B 15	.505	.20	15,000	51,550	36.5	54.6	Silky, trace of granulation	.43*, .30
7004	A 50 2 I B 15	.505	.20	33,000	83,450	20.5	20.5	Granular, silky spot at circumference	.23*, .18
6825	A 51 I B 15	.505	.20	34,000	73,950	22.5	23.9	.....do	.28*, .22
6826	A 52 I B 15	.505	.20	26,000	68,500	22.5	20.5	.....do	.20, .25*
6827	A 53 I B 15	.505	.20	32,000	69,050	30.0	40.3	Silky, trace of granulation	.26, .34*
6828	A 54 I B 15	.505	.20	17,000	54,600	34.0	49.1	.....do	.39*, .29
6982	A 54 I B 15	.505	.20	29,000	69,050	20.0	23.9	Granular, silky spot at circumference	.21*, .19
6829	A 55 I B 15	.505	.20	29,000	66,050	26.5	30.7	Granular 60 per cent, silky 40 per cent	.33*, .20
6830	A 56 I B 15	.505	.20	24,000	63,900	15.0	16.9	Granular, silky spot at circumference	.17*, .13
6926	A 56 2 I B 15	.505	.20	33,000	68,200	27.5	34.0	Granular 30 per cent, dull gray amorphous 70 per cent	.25, .30*
6979	A 56 2 I B 15	.505	.25	31,000	74,200	19.0	20.5	Granular, silky spot at circumference	.17, .21*
6831	A 57 I B 15	.505	.20	22,000	63,450	27.5	30.7	Granular 80 per cent, silky 20 per cent	.23, .32*
7011	A 57 2 I B 15	.505	.20	24,000	71,500	18.5	23.9	Granular, silky spot at circumference	.18, .19*
6908	A 58 I B 15	.505	.20	29,000	70,600	9.5	5.7	Granular, dull flaky spot at circumference	.10*, .09
6932	A 58 2 I B 15	.505	.20	29,000	72,500	20.0	20.5	Granular, silky spot at circumference	.22*, .18
6909	A 59 I B 15	.505	.20	23,000	55,200	7.5	9.5	Coarse granular and flaky metal	.10*, .05
6933	A 59 2 I B 15	.505	.20	30,000	67,050	25.0	30.7	Dull silky, trace of granulation	.28*, .22
6910	A 60 I B 15	.505	.20	30,000	67,550	10.0	13.2	Granular, silky spot at circumference	.13*, .07
6934	A 60 2 I B 15	.505	.20	....	19,500	2.0	....	Dull gray amorphous 10 per cent, dark serrated 90 per cent	.02*, .02*
6911	A 61 I B 15	.505	.20	33,000	73,000	21.0	27.4	Granular, silky spot at circumference	.19, .23*
6912	A 62 I B 15	.505	.20	24,000	67,900	25.0	37.1	Silky 50 per cent, granular 50 per cent	.18, .32*
6913	A 63 I B 15	.505	.20	29,000	69,750	22.5	27.4	Silky, oblique	.27*, .13

TABULATION OF STEEL SPECIMENS FROM 6-POUNDER AND 15-POUNDER GUN MOUNTS (STEMS 2″ LONG)—Continued.

INNER BASES, 15-POUNDER GUN MOUNTS, STEEL CASTINGS—Continued.

No. of test.	Marks.	Diameter.	Sectional area.	Elastic limit per square inch.	Tensile strength per square inch.	Elongation in 2 inches.	Contraction of area.	Appearance of fracture.	Elongation of inch sections.
		Inch.	*Sq. inch.*	*Pounds.*	*Pounds.*	*Per cent.*	*Per cent.*		″ ″
6948	A 64 I B 15	.505	.20	31,000	85,100	18.0	16.9	Granular, silky spot at circumference	.18, .18*
6970	A 65 I B 15	.505	.20	28,000	72,400	18.0	16.9	Granular, dull spot at circumference	.12, .14
6995	A 65 I B 15	.505	.20	34,000	77,900	23.0	30.7	Granular 55 per cent, silky 45 per cent	.24*, .22*
6975	A 66 I B 15	.505	.20	28,000	71,600	9.5	9.5	Granular, silky spot at circumference	.10*, .09
6996	A 66 2 I B 15	.505	.20	29,000	71,600	23.5	30.7	Granular 60 per cent, silky 40 per cent	.19, .28
7005	A 67 I B 15	.505	.20	35,000	72,000	23.0	27.4	Granular, silky spot at circumference	.20, .26*
7024	A 68 I B 15	.505	.20	27,000	65,400	18.5	20.5	Granular 60 per cent, silky oblique 40 per cent	.18, .19*
7079	A 69 I B 15	.505	.20	31,000	70,900	17.5	20.5	Granular 80 per cent, silky 20 per cent	.19*, .16
7080	A 70 I B 15	.505	.20	25,000	49,800	5.5	9.5	Dull amorphous, spongy spot	.08*, .03
7143	A 70 2 I B 15	.505	.20	33,000	71,500	21.5	23.9	Granular 80 per cent, silky 20 per cent	.26*, .17
7132	A 71 I B 15	.505	.20	27,000	69,000	19.0	16.9	Granular, silky spot at circumference	.19*, .19
7133	A 72 I B 15	.505	.20	31,000	67,450	14.5	16.9	Granular 80 per cent, silky 20 per cent	.16*, .13
7155	A 72 2 I B 15	.505	.20	31,000	67,000	26.0	34.0	Silky, trace of granulation	.31*, .21
7144	A 73 I B 15	.505	.20	31,000	70,400	21.5	27.4	Granular, silky spot at circumference	.23*, .20
7145	A 74 I B 15	.505	.20	35,000	74,000	16.5	20.5	.....do	.17*, .16
7172	A 75 I B 15	.505	.20	29,000	68,500	15.0	16.9	.....do	.14, .16*
7202	A 75 2 I B 15	.505	.20	27,000	67,950	18.0	16.9	.....do	.15*, .11
7178	A 76 I B 15	.505	.20	32,000	69,100	14.0	16.9	.....do	.14*, .14
7208	A 76 2 I B 15	.505	.20	33,000	72,500	18.5	20.5	Granular 75 per cent, silky 25 per cent	.17, .20*

7163	A 77 I B 15	.505	.20	31,000	68,950	22.0	23.9	Granular 80 per cent, silky 20 per cent	.20, .24
7164	A 78 I B 15	.505	.20	34,000	69,400	21.0	20.5	.....do	.18, .24*
7191	A 79 I B 15	.505	.20	33,000	76,100	17.0	20.5	Granular, silky spot at circumference	.17, .17*
7192	A 80 I B 15	.505	.20	22,000	67,400	23.0	30.7	.....do	.20, .26*
7193	A 81 I B 15	.505	.20	23,000	67,500	17.5	16.9	Granular, silvery luster, silky spot at the circumference	.17, .18*

OUTER BASES, 15-POUNDER GUN MOUNTS, STEEL CASTINGS.

6959	D 13 O B 15	.505	.20	33,000	63,000	11.0	13.2	Dull amorphous, oblique, small granular spots	.15*, .07
6960	D 14 O B 15	.505	.20	36,000	66,550	11.0	16.9	Granular 50 per cent, dull amorphous 50 per cent	.13*, .08
6961	D 29 O B 15	.505	.20	26,000	59,100	7.0	13.2	Granular, spongy spot at circumference	.05, .09*
6962	D 45 O B 15	.505	.20	20,000	58,200	26.0	27.4	Granular, dull spongy at circumference	.22, .30*
6963	D 46 O B 15	.505	.20	20,000	58,350	22.5	30.7	Granular, dull silky center	.23*, .18
6974	D 49 O B 15	.505	.20	29,000	80,400	16.0	16.9	Granular, silky spot at circumference	.15, .17*
6985	D 50 O B 15	.505	.20	33,000	55,100	8.0	9.5	Dull amorphous oblique	.11, .05
7027	D 51 O B 15	.505	.20	30,000	99,100	11.5	13.2	Granular	.10, .13
7028	D 52 O B 15	.505	.20	26,000	67,500	11.0	13.2	Granular, dull amorphous center	.10, .12*
7081	D 53 O B 15	.505	.20	34,000	74,750	19.0	20.5	Granular, silky spot at circumference	.19, .19*
7082	D 54 O B 15	.505	.20	29,000	69,550	9.5	13.2	Granular, silky spot on one side with cavity	.10*, .09
7170	D 54 2 O B 15	.505	.20	27,000	72,850	16.0	16.9	Granular, silky spot at circumference	.16*, .16*
7089	D 55 O B 15	.505	.20	28,000	72,050	13.5	13.2	.....do	.12, .15*
7130	D 56 O B 15	.505	.20	33,000	81,000	17.5	13.2	.....do	.18*, .17
7131	D 57 O B 15	.505	.20	34,000	73,950	18.0	16.9	.....do	.17, .19*
7146	D 58 O B 15	.505	.20	34,000	74,900	18.0	20.5	.....do	.16, .20*
7171	D 59 O B 15	.505	.20	29,000	68,950	16.0	16.9	.....do	.15, .17*
7162	D 60 O B 15	.505	.20	30,000	75,500	17.0	16.9	.....do	.17, .17*

TABULATION OF STEEL SPECIMENS FROM 6-POUNDER AND 15-POUNDER GUN MOUNTS (STEMS 2" LONG)—Continued.

OUTER BASES, 15-POUNDER GUN MOUNTS, STEEL CASTINGS—Continued.

No. of test.	Marks.	Diameter.	Sectional area.	Elastic limit per square inch.	Tensile strength per square inch.	Elongation in 2 inches.	Contraction of area.	Appearance of fracture.	Elongation of inch sections.
		Inch.	*Sq. inch.*	*Pounds.*	*Pounds.*	*Per cent.*	*Per cent.*		″ ″
7180	D 61 O B 15	.505	.20	29,000	64,950	13.5	13.2	Granular 60 per cent, silky 40 per cent	.12, .15*
7181	D 62 O B 15	.505	.20	29,000	65,000	15.0	16.9	Silky, trace of granulation	.15, .15*
7182	D 63 O B 15	.505	.20	32,000	70,100	19.5	20.5	Granular 80 per cent, silky 20 per cent	.21*, .18
7183	D 64 O B 15	.505	.20	32,000	73,600	17.5	20.5	Granular 90 per cent, silky 10 per cent	.16, .19*
7190	D 65 O B 15	.505	.20	27,000	64,400	7.5	9.5	Granular 85 per cent, silky 15 per cent	.06, .09*
7201	D 66 O B 15	.505	.20	29,000	72,400	15.5	16.9	Granular 80 per cent, silky 20 per cent	.16*, .15

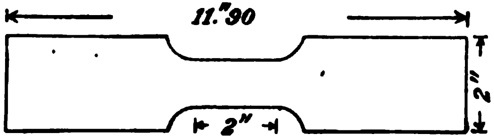
PISTON RODS, 15-POUNDER GUN MOUNTS, STEEL FORGINGS.

No. of test.	Marks.	Diameter.	Sectional area.	Elastic limit per square inch.	Tensile strength per square inch.	Elongation in 2 inches.	Contraction of area.	Appearance of fracture.	Elongation of inch sections.
6885	A 81 P R 15	.505	.20	39,000	77,500	27.0	40.3	Silky	.32*, .22
6886	A 82 P R 15	.505	.20	38,000	78,050	27.0	40.3	....do	.32*, .22

CASEMATE MOUNTS, 15-POUNDER GUNS, STEEL CASTINGS.

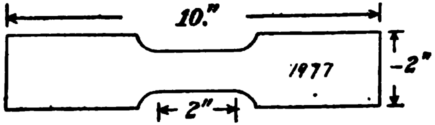
No. of test.	Marks.	Diameter.	Sectional area.	Elastic limit per square inch.	Tensile strength per square inch.	Elongation in 2 inches.	Contraction of area.	Appearance of fracture.	Elongation of inch sections.
6462	A 1 C M 15	.505	.20	24,000	63,950	18.0	16.9	Fine granular, dull spot at circumference	.18, .18*
6463	A 2 C M 15	.505	.20	20,000	54,850	8.0	16.9	Granular 50 per cent, dull silky 50 per cent	.07, .09*
6518	A 2 2 C M 15	.505	.20	22,000	61,950	13.0	13.2	Granular, dull amorphous spot at the circumference	.14*, .12

STEEL TRAIL PLATES, 2-POUNDER MOUNTS.



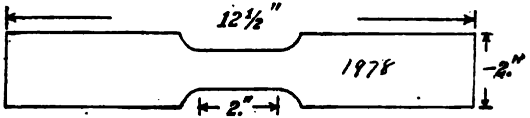
No. of test.	Mark.	Dimensions.		Sectional area.	Ultimate strength.		Elongation in 2 inches.		Area at fracture.	Contraction of area.	Appearance of fracture.	Elongation of inch sections.
		Width.	Thickness.		Total.	Per square inch.						
		Inches.	*Inch.*	*Sq. inch.*	*Pounds.*	*Pounds.*	*Inch.*	*Per cent.*	*In. In. Sq. in.*	*Per cent.*		" "
9774	1	1.00	.125	.125	8,290	66,320	.45	22.5	.90×.09=.081	35.2	Silky	.30*, .15
9775	2	1.00	.126	.126	8,640	68,570	.49	24.5	.86×.08=.069	45.2	Silky, lamellar	.30*, .19
9776	4	1.00	.124	.124	8,180	65,970	.54	27.0	.87×.08=.070	43.5	Silky	.36*, .18
9777	5	1.00	.123	.123	8,240	66,990	.51	25.5	.86×.07=.060	51.2	.....do	.16, .35*

STEEL TAIL PIECES, 6-POUNDER MOUNTS.



No. of test.	Mark.	Dimensions.		Sectional area.	Ultimate strength.		Elongation in 2 inches.		Area at fracture.	Contraction of area.	Appearance of fracture.	Elongation of inch sections.
		Width.	Thickness.		Total.	Per square inch.						
		Inches.	*Inch.*	*Sq. inch.*	*Pounds.*	*Pounds.*	*Inch.*	*Per cent.*	*In. In. Sq. in.*	*Per cent.*		″ ″
9726	$\left\{\frac{1}{\mathrm{T\,P\,6}}\right\}$	1.001	.247	.247	14,120	57,170	.70	35.0	.73×.14=.102	58.7	Silky	.21, .49*
9727	$\left\{\frac{2}{\mathrm{T\,P\,6}}\right\}$	1.000	.227	.227	14,490	63,830	.60	30.0	.78×.15=.117	48.4	Silky, oblique	.34*, .26

STEEL TRAILS, 6-POUNDER MOUNTS.



No. of tets.	Mark.	Dimensions.		Sectional area.	Ultimate strength.		Elongation in 2 inches.		Area at fracture.	Contraction of area.	Appearance of fracture.	Elongation of inch sections.
		Width.	Thickness.		Total.	Per square inch.						
		Inches.	*Inch.*	*Sq. in.*	*Pounds.*	*Pounds.*	*Inch.*	*Per cent.*	*In. In. Sq. in.*	*Per cent.*		" "
9749	A 3 T 6	1.001	.260	.260	16,790	64,580	.65	32.5	.77×.17=.131	49.6	Silky	.40*, .25
9750	A 4 T 6	1.000	.256	.256	15,810	61,760	.67	33.5	.76×.16=.122	52.3	....do	.47*, .20
9751	A 5 T 6	1.001	.256	.256	16,220	63,360	.69	34.5	.77×.18=.139	45.7	....do	.45*, .24
9752	A 6 T 6	1.001	.254	.254	16,290	64,130	.69	34.5	.78×.16=.125	50.8	....do	.25, .44*
9753	A 7 T 6	1.001	.248	.248	16,080	64,640	.68	34.0	.78×.16=.125	49.6	....do	.44*, .24
9754	A 8 T 6	1.001	.248	.248	16,070	64,800	.65	32.5	.79×.17=.134	45.9	....do	.39*, .26
9755	A 9 T 6	1.000	.243	.243	15,200	62,550	.64	32.0	.78×.16=.125	48.6	....do	.30*, .34*
9756	A 10 T 6	1.001	.241	.241	15,220	63,150	.65	32.5	.78×.15=.117	51.5	....do	.28, .37*
9764	11 T 6	1.000	.275	.275	16,300	59,270	.80	40.0	.73×.17=.124	54.9	....do	.26, .54*
9765	12 T 6	1.000	.270	.270	17,080	63,260	.72	36.0	.75×.17=.127	53.0	Silky, seam at center	.40*, .32
9766	13 T 6	.999	.269	.269	16,320	60,670	.77	38.5	.72×.16=.115	57.2	Silky	.27, .50*
9767	14 T 6	.999	.269	.269	17,200	63,940	.70	35.0	.76×.18=.137	49.1	....do	.41*, .29
9768	15 T 6	1.000	.248	.248	15,980	64,430	.66	33.0	.76×.15=.114	54.	....do	.25, .41*
9769	16 T 6	.999	.259	.259	17,120	66,100	.68	34.0	.77×.16=.123	52.5	....do	.40*, .28

STEEL FOR GATLING GUN BARRELS.

No. 6899.

Marks, G G C.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 3″.

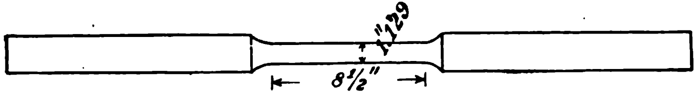
Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0,	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000300	.000200	....	....	
20,000	.000633	.000333	....	....	
30,000	.001000	.000367	....	....	
40,000	.001333	.000333	....	....	
50,000	.001667	.000334	0.	....	
60,000	.002000	.000333	....	....	
68,000	.002333	.000333	....	....	
69,000	.002367	.000034	....	....	Elastic limit.
	.008667	.006300	....	....	
70,000	.009000	.000333	....	....	
72,000	.009500	.000500	....	....	
76,000	.012667	.003167	....	....	
80,000	.015333	.002666	....	....	
84,000	.018333	.003000	....	....	
88,000	.021833	.003500	....	....	
92,000	.025667	.003834	....	....	
96,000	.030000	.004333	....	....	
100,000	.035000	.005000	....	....	
117,600	....	....	....	....	Tensile strength.

General summary.

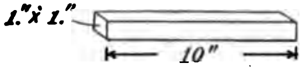
Tensile strength per square inch of original section	pounds	117,600
Elastic limit per square inch of original section	do	69,000
Elongation per inch after rupture	inch	.1667
Elongation per inch under strain at elastic limit	do	.002367
Reduction in diameter at point of rupture	do	.125
Reduction in area after rupture, per cent of original section		43.3
Position of rupture		1.″5 from neck
Character of broken surface		silky
Elongation of inch sections		″.10, ″.28*, ″.12

ANCHOR BOLTS FOR GUN CARRIAGES.

Tension specimens.



Bending specimens.



No. of test.	Description.	Diameter.	Sectional area.	Elastic limit per square inch.	Tensile strength per square inch.	Elongation in 8 inches.	Contraction of area.	Appearance of fracture.	Elongation of inch sections.	Bending tests.
		Inches.	*Sq. inches.*	*Pounds.*	*Pounds.*	*Per cent.*	*Per cent.*			
9675	1¾-inch bolt for New London, Conn.	1.129	1.00	35,300	65,420	29.8	57.0	Finesilky, cupshaped	″.19, ″.24, ″.29, ″.68*, ″.37, ″.23, ″.22, ″.16.	Bent cold 180° and closed down without fracture on the tension side. A shearing fracture opened on the compression side of the bend.
9692	2¼-inch bolt for New London, Conn.	1.129	1.00	29,300	59,620	29.7	47.2	Silky	″.23, ″.22, ″25, ″.28, ″.55*, ″.42, ″.25, ″.18.	Bent cold 180° and closed down without fracture.
9693	2-inch bolt for New London, Conn.	1.129	1.00	29,250	57,740	30.9	55.8	....do	″.22, ″.25, ″.25, ″.24, ″.70*, ″.29″, .24, ″.18.	Do.
10257	2-inch bolt for Fort Foster, Me. Marks 12486.	1.129	1.00	30,500	57,310	29.9	58.1	....do	″.19, ″.20, ″.23, ″.23, ″.30, ″.73*, ″.30, ″.21.	Bent cold 180° and closed down without fracture on the tension side.
10255	1¾-inch bolt	1.129	1.00	37,400	62,650	30.6	55.8	....do	″.25, ″.71*, ″.31, ″.24, ″.25, ″.24, ″.24, ″.21.	Do.
10256	1¼-inch bolt	1.129	1.00	38,600	64,300	28.2	53.4	....do	″.18, ″.21, ″.22, ″.46, ″.52*, ″.26, ″.23, ″.18.	Do.
9700	From Sandy Hook Proving Ground.	1.129	1.00	35,300	54,900	32.3	59.3	....do	″.23, ″.25, ″.25, ″.29, ″.70*, ″.40, ″.25, ″.21.	Bent cold 180° and closed down. A shearing fracture occurred on the inside of the bend. On the tension side of the bend the metal did not fracture.
9702	....do	1.129	1.00	32,800	64,200	28.9	48.5	Silky, trace of granulation.	″.19, ″.24, ″.29, ″.60*, ″.33, ″.25, ″.22, ″.19.	Bent cold 180°. In closing down a shearing fracture developed, separating the specimen.
9703	....do	1.129	1.00	40,400	59,700	29.6	52.2	Silky	″.20, ″.22, ″.26, ″.27, ″.54*, ″.42, ″.27, ″.19.	Bent cold 180° and closed down without fracture.
9704	....do	1.129	1.00	35,200	55,900	32.4	57.0	....do	″.20, ″.27, ″.29, ″.70*, ″.41, ″.26, ″.26, ″.20.	Bent cold 180°. In closing down a shearing fracture developed, separating the specimen.

ANCHOR BOLTS FOR GUN CARRIAGES—Continued.

No. of test.	Description.	Diameter.	Sectional area.	Elastic limit per square inch.	Tensile strength per square inch.	Elongation in 8 inches.	Contraction of area.	Appearance of fracture.	Elongation of inch sections.	Bending tests.
		Inches.	*Sq. inches.*	*Pounds.*	*Pounds.*	*Per cent.*	*Per cent.*			
9770	From Sandy Hook Proving Ground.	1.129	1.00	46,800	74,100	25.3	36.4	Silky, interspersed with fine granulation 70 per cent, silky 30 per cent.	″.20, ″.20, ″.26, ″.44*, ″.30, ″.24, ″.20, ″.18.	Bent cold 180°. In closing down two shearing fractures occurred on the inside of the bend. Appearance granular. No fractures occurred on the tension side of the bend.
9771	.....do	1.129	1.00	30,100	53,980	8.8	8.4	Granular, with dull silky spot at the circumference; opened cracks along the stem in vicinity of fracture.	″.13*, ″.09, ″.08, ″.09, ″.08, ″.08, ″.07, ″.08.	Bent cold 140°, and then fractured in the quarter, from the tension side. Appearance granular.
9871	.....do	.564	.25	39,920	71,360	[1]25.0	44.6	Silky	″.18, ″.23, ″.40*, ″.19	
9872	.....do	.564	.25	42,400	71,080	[1]25.2	44.6	.....do	″.20, ″.42*, ″.23, ″.16	
9895	.....do	1.129	1.00	57,100	88,900	19.1	29.1	Fine granular 60 per cent, silky 40 per cent.	″.14, ″.17, ″.21, ″.33*, ″.24, ″.17, ″.15, ″.12.	Bent cold through an angle of 145°, and then fractured from the tension side. Appearance silky on the outside of the bend, fine granular on the inside.
9918	.....do	1.129	1.00	35,600	56,880	31.6	51.0	Silky	″.20, ″.26, ″.28, ″.34, ″.66*, ″.33, ″.25, ″.21.	Bent cold 180° and closed down without fracture.

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[1] Elongation in 4 inches.

NOTE.—Specimens from Sandy Hook have threaded ends.

PISTON RODS.

PROOF STRESS APPLIED TO PISTON RODS FOR GUN CARRIAGES.

Description.	Total length.	Diameters.			Tensile stress applied.
		Maximum.	Minimum.	Root of thread.	
	Inches.	*Inches.*	*Inches.*	*Inches.*	*Pounds.*
6″ disappearing carriage	119.25	2.50	2.125	2.015	40,000
8″ disappearing carriage	172.75	3.50	3.00	2.89	90,000
Rapid-fire gun carriage	32.50	3.75	....	....	100,000
10″ barbette carriage	93.00	4.00	....	....	281,950
10″ disappearing carriage	179.45	3.50	3.00	2.83	125,000
12″ disappearing carriage	219.75	4.75	4.25	4.07	150,000

SUSPENSION RODS.

PROOF STRESS APPLIED TO SUSPENSION RODS FOR COUNTER-WEIGHTS FOR DISAPPEARING GUN CARRIAGES.

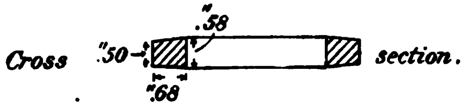
Description.	Diameter of rod.	Diameter at root of thread.	Tensile stress applied.
	Inches.	*Inches.*	*Pounds.*
6″ disappearing carriage	2½	2⅛	50,000
8″ disappearing carriage	3½	3⅛	102,000
10″ disappearing carriage	4½	4.3	174,000

HELICAL SPRINGS FOR MORTAR CARRIAGES.

COMPRESSION TESTS OF HELICAL SPRINGS FOR 7-INCH MORTAR CARRIAGES. MODEL 1895.

Springs branded "French ☞ G. E. 6–99."

COUNTER RECOIL SPRINGS.



No. of spring.	Weight.	Exterior diameter.	Diameter of wire.	Height unloaded.	Load when compressed to height of 6 inches.	Closed down.		Load when returned to height of 6 inches.
						Load.	Height.	
	Lbs. oz.	*Inches.*	*Inch.*	*Inches.*	*Pounds.*	*Pounds.*	*Inches.*	*Pounds.*
1..........	8 2¼	4.35	.58×.68	7.22	1,185	3,200	4.05	900
2..........	8 6	4.40	.60×.70	7.15	1,282	3,500	4.12	1,070
3..........	8 3¼	4.40	.60×.70	7.30	1,275	3,300	4.12	1,089
4..........	8 4	4.40	.59×.70	7.42	1,400	3,500	4.12	1,260
5..........	8 8¼	4.40	.60×.70	7.38	1,435	3,700	4.17	1,280
6..........	8 5¼	4.40	.60×.70	7.13	1,165	3,200	4.04	955
7..........	8 2	4.40	.58×.69	7.20	1,200	3,300	4.11	1,026
8..........	8 8¼	4.45	.60×.72	7.10	1,077	3,300	4.10	900
9..........	8 1	4.36	.59×.68	7.30	1,290	3,200	4.11	1,125
10..........	8 5	4.40	.60×.70	7.30	1,300	3,200	4.12	1,091

The fifth spring was closed down and so remained for a period of sixteen hours, at the end of which time the load sustained was 1,235 pounds when returned to a height of 6 inches.

The spring was further loaded 100 times, being closed to a height of 4¼ inches and released to a height of 6 inches between each loading.

Load sustained when 4¼ inches high at one hundredth loading, 3,470 pounds.

Load sustained when 6 inches high at one hundredth loading, 1,306 pounds.

COMPRESSION TEST OF HELICAL SPRINGS FOR 6-INCH DISAPPEARING GUN CARRIAGE. L. F. MODEL 1898.

ELEVATING WORM SPRING.

Weight.	Exterior diameter.	Diameter of wire.	Height unloaded.	Load when compressed to height of 7 inches.	Height of spring at 2,000 pounds load.	Closed down.		Height at 2,000 pounds load.	Load at height of 7 inches.
						Load.	Height.		
Lbs. oz.	*Inches.*	*Inch.*	*Inches.*	*Pounds.*	*Inches.*	*Pounds.*	*Inches.*	*Inches.*	*Pounds.*
8 12¼	3.80	.75	7.60	1,775	6.92	5,900	5.53	6.80	1,460

BUFFER SPRING.

1 9¼	2.00	.40	5.22	....	....	2,100	3.63	....	....

COMPRESSION OF HELICAL SPRINGS FOR 7-INCH SIEGE MORTARS, STEEL.

No. of spring.	Weight.	Diameters.		Diameter of wire.	Distance between coils.	Height unloaded.	Load when compressed to height of 6 inches.	Height under 1,000-pound load.	Closed down.		Load when 6 inches high.	Height under 1,000-pound load.
		Exterior.	Interior.						Height.	Load.		
	Lbs. oz.	*In.*	*In.*	*In.*	*In.*	*Inches.*	*Pounds.*	*Inches.*	*Inches.*	*Lbs.*	*Lbs.*	*Inches.*
1	7 9	4.93	3.59	.67	.82	7.50	1,170	6.18	3.81	3,180	1,028	....
2	7 9¼	4.95	3.61	.67	.81	7.63	1,242	6.28	3.80	3,240	1,124	6.14
3	7 9¼	4.98	3.64	.67	.79	7.35	978	5.98	3.90	2,920	885	5.84
4	7 12¼	4.94	3.60	.67	.80	7.50	1,170	6.18	3.98	3,150	1,038	6.04
5	7 13½	4.95	3.61	.67	.80	7.72	1,364	6.42	3.93	3,260	1,260	6.27
6	7 10¼	4.98	3.64	.67	.79	7.27	1,035	6.02	3.88	3,110	935	5.93
7	7 12¼	4.98	3.64	.67	.78	7.35	1,107	6.11	3.90	3,160	1,000	6.00
8	7 9	4.95	3.61	.67	.80	7.33	1,089	6.10	3.84	3,140	987	5.99
9	7 11¼	4.95	3.59	.68	.80	7.30	1,000	6.00	3.90	3,150	914	5.91
10	7 9	4.95	3.61	.67	.82	7.55	1,168	6.19	3.84	3,200	1,054	6.08

HELICAL SPRINGS, DOUBLE COIL, FOR 12-INCH MORTAR CARRIAGES.

Six springs from lot of 105 received January 29, 1900.

DESCRIPTION OF ONE SPRING.

Outside coil, left-hand spring:	
Exterior diameter of coil ..... inches	9.00
Diameter of bar ..... do	1.74
Height of spring unloaded ..... do	14.36
Distance between coils ..... do	1.03
Weight	84 pounds 12 ounces
Inside coil, right-hand spring:	
Exterior diameter of coil ..... inches	5.58
Diameter of bar ..... do	1.24
Height of spring unloaded ..... do	13.32
Distance between coils ..... do	.57
Weight	34 pounds 8 ounces

Description.	Height.	Load sustained.	Remarks.
	Inches.	*Pounds.*	
First spring	12.25	18,240	
	9.75	46,250	
	9.67	48,000	Closed down.
	9.75	45,500	
	12.25	13,980	
Second spring	12.25	19,040	
	9.75	54,400	Most of the coils closed down.
	12.25	14,700	This spring was practically closed down at 49,000 pounds.
Third spring	12.25	17,000	
	9.75	44,500	
	9.68	47,000	Closed down.
	9.75	43,700	
	12.25	13,000	
Fourth spring	12.25	18,700	
	9.75	46,700	Closed down.
	12.25	14,550	
Fifth spring	12.25	18,650	
	9.75	46,800	
	9.70	48,000	Closed down.
	12.25	14,300	
Sixth spring	12.25	19,920	
	9.75	51,500	
	12.25	15,500	This spring was practically closed down at 48,000 pounds.
	10.25	40,300	
Loaded 100 times, compressing to 10″.25 height and returning to 12″.25 height each time. Rested 17 hours compressed to 10″.25 after 68 loadings. After 100 loadings the results were as follows:			
	10.25	40,100	
	12.25	15,200	

Retest of springs after 5 days' rest.

Description.	Height.	Load sustained.	Remarks.
	Inches.	*Pounds.*	
First spring	12.25	17,600	
	9.75	46,250	
	9.67	48,000	
	9.75	45,500	
	11.87	18,000	
	12.25	14,000	

There appeared a slight recovery immediately following the final reading above, the load appearing to increase to 14,080 pounds under 12″.25 height.

The spring was then allowed to remain strained for a period of 17 hours, at the end of which interval the reaction of the spring remained unchanged, at 14,080 pounds.

TEST RESUMED.

Description.	Height.	Load sustained.	Remarks.
	Inches.	*Pounds.*	
First spring	9.75	45,600	
	12.25	13,900	
	12.62	10,000	
	12.25	14,420	
	12.63	10,000	
	12.83	8,000	
	12.66	10,000	
	12.25	14,860	
	12.66	10,000	
	12.84	8,000	
	13.21	5,000	
	12.91	8,000	
	12.73	10,000	
	12.25	15,570	
	12.71	10,000	
	12.90	8,000	
	18.21	5,000	
	13.58	3,000	
	13.28	5,000	
	12.95	8,000	
	12.77	10,000	
	12.25	16,000	
	11.93	20,000	
	11.50	25,000	
	11.90	20,000	
	12.25	15,760	
	11.90	20,000	
	11.50	25,000	
	11.06	30,000	
	11.45	25,000	
	11.86	20,000	
	12.02	18,000	
	12.25	15,350	
	12.03	18,000	
	11.87	20,000	
	11.47	25,000	
	11.06	30,000	
	10.64	35,000	
	11.01	30,000	
	11.40	25,000	
	11.81	20,000	
	11.98	18,000	
	12.25	14,990	
	12.00	18,000	
	11.84	20,000	
	11.44	25,000	
	11.03	30,000	
	10.63	35,000	
	10.20	40,000	
	10.55	35,000	
	10.93	30,000	
	11.33	25,000	
	11.75	20,000	
	11.93	18,000	
	12.25	14,470	
	11.96	18,000	
	11.74	20,000	
	11.39	25,000	
	10.99	30,000	
	10.60	35,000	
	10.20	40,000	
	9.80	45,000	
	10.10	40,000	
	10.47	35,000	
	10.86	30,000	
	11.26	25,000	
	11.70	20,000	
	11.87	18,000	
	12.25	13,920	
	13.57	3,000	
	12.25	15,980	
	12.07	18,000	

TEST RESUMED—Continued.

Description.	Height.	Load sustained.	Remarks.
	Inches.	*Pounds.*	
Second spring	12.25	18,060	
	9.75	51,080	
	11.94	18,000	
	12.25	14,560	
Third spring	12.25	16,220	
	12.09	18,000	
	9.75	43,960	
	11.76	18,000	
	12.25	12,970	
Fourth spring	12.25	18,080	
	9.75	46,440	
	11.91	18,000	
	12.25	14,360	
Fifth spring	12.25	17,800	
	12.24	18,000	
	9.75	46,240	
	11.90	18,000	
	12.25	14,200	
Sixth spring	12.25	18,960	
	9.75	49,400	
	11.98	18,000	
	12.25	15,080	

TESTS OF INSIDE AND OUTSIDE COILS OF FIRST SPRING SEPARATELY.

Description.	Height.	Load sustained.	Remarks.
	Inches.	*Pounds.*	
First spring, inside coil	13.00	1,000	
	12.25	4,965	
	9.75	17,660	
	12.25	3,755	
	12.65	2,000	
	12.46	3,000	
	12.28	4,000	
	12.47	3,000	
	12.64	2,000	
	12.29	4,000	
	11.95	6,000	
	11.58	8,000	
	11.96	6,000	
	12.27	4,000	
	12.65	2,000	
	12.28	4,000	
	11.96	6,000	
	11.59	8,000	
	11.23	10,000	
	10.85	12,000	
	11.19	10,000	
	11.53	8,000	
	11.89	6,000	
	12.25	4,000	
	12.65	2,000	
	12.28	4,000	
	11.96	6,000	
	11.59	8,000	
	11.22	10,000	
	10.86	12,000	
	10.46	14,000	
	10.02	16,000	
	10.38	14,000	
	10.72	12,000	
	11.08	10,000	
	11.44	8,000	
	11.82	6,000	
	12.20	4,000	
	12.64	2,000	

TESTS OF INSIDE AND OUTSIDE COILS OF FIRST SPRING SEPARATELY—Continued.

Description.	Height.	Load sustained.	Remarks.
	Inches.	*Pounds.*	
First spring, inside coil.....	12.28	4,000	
	11.95	6,000	
	11.59	8,000	
	11.21	10,000	
	10.84	12,000	
	10.46	14,000	
	10.03	16,000	
	9.75	18,000	
	9.97	16,000	
	10.31	14,000	
	10.66	12,000	
	11.01	10,000	
	11.39	8,000	
	11.78	6,000	
	12.18	4,000	
	12.61	2,000	
	13.90	2,000	
First spring, outside coil....	12.25	11,910	
	9.75	28,010	
	12.25	10,190	
	13.79	2,000	
	13.45	4,000	
	12.78	8,000	
	12.14	12,000	
	12.77	8,000	
	13.42	4,000	
	13.79	2,000	
	13.45	4,000	
	12.79	8,000	
	12.15	12,000	
	11.51	16,000	
	10.89	20,000	
	11.48	16,000	
	12.06	12,000	
	12.71	8,000	
	13.42	4,000	
	13.78	2,000	
	13.44	4,000	
	12.78	8,000	
	12.15	12,000	
	11.51	16,000	
	10.89	20,000	
	10.27	24,000	
	9.75	28,000	
	10.17	24,000	
	10.70	20,000	
	11.30	16,000	
	11.96	12,000	
	12.61	8,000	
	13.36	4,000	
	13.78	2,000	
	12.13	12,000	
	9.74	28,000	
	11.93	12,000	Spring remained under this load 16 hours without sensible change in load or height.
	13.35	4,000	
	13.50	3,220	
	13	6,270	
	12.5	9,370	
	12	12,540	
	11.5	15,680	
	11	18,900	
	10.5	22,180	
	10	25,500	
	9.75	27,750	
	10	25,130	
	10.5	21,430	
	11	17,900	
	11.5	14,620	
	12	11,510	
	12.5	8,550	
	13	5,750	
	13.5	3,170	

HELICAL SPRINGS, DOUBLE COIL, FOR 12-INCH MORTAN CARRIAGES.

Six springs from lot of 101 received March 24, 1900.

DESCRIPTION OF ONE SPRING.

Outside coil, left-hand spring:		
Exterior diameter of coil	inches	9.15
Diameter of bar	do	1.75
Height of spring unloaded	do	14.30
Distance between coils	do	1.00
Weight		86 pounds
Inside coil, right-hand spring:		
Exterior diameter of coil	inches	5.55
Diameter of bar	do	1.25
Height of spring unloaded	do	13.68
Distance between coils	do	.58
Weight		34 pounds 8 ounces

Description.	Height.	Load sustained.	Remarks.
	Inches.	*Pounds.*	
First spring	12.36	18,000	
	12.25	19,240	
	9.75	47,200	
	9.62	50,900	Closed down.
	9.75	46,150	
	11.90	18,000	
	12.25	14,300	
Second spring	12.37	18,000	
	12.25	19,340	
	9.75	47,100	
	9.60	52,000	Closed down.
	9.75	45,500	
	11.93	18,000	
	12.25	14,700	
Third spring	12.25	18,000	
	9.75	45,280	
	9.56	52,400	Closed down.
	9.75	43,800	
	11.78	18,000	
	12.25	13,380	
Fourth spring	12.34	18,000	
	12.25	19,060	
	9.75	46,000	
	9.61	50,200	Closed down.
	9.75	44,780	
	11.87	18,000	
	12.25	14,260	
Fifth spring	12.35	18,000	
	12.25	19,200	
	9.75	46,680	
	9.63	51,600	Closed down.
	9.75	45,500	
	11.91	18,000	
	12.25	14,570	
Sixth spring	12.33	18,000	
	12.25	19,000	
	9.75	47,200	
	9.66	52,600	Closed down.
	9.75	46,000	
	11.90	18,000	
	12.25	14,550	
	10.25	39,640	
Loaded 100 times, compressing to 10″.25 and returning to 12″.25 height each time.			
	10.25	39,640	
	11.91	18,000	
	12.25	14,400	
Closed down and so remained for a period of 16 hours, after which the results were as follows:			
	9.75	44,650	
	10.25	37,500	
	11.82	18,000	
	12.25	13,500	
	11.86	18,000	
	10.25	38,820	
	9.75	45,520	
	10.25	38,000	
	11.81	18,000	
	12.25	13,400	

Six springs from a lot of 45 received April 9, 1900.

DESCRIPTION OF ONE SPRING.

Outside coil, left-hand spring:		
Exterior diameter of coil	inches	9.05
Diameter of bar	do	1.74
Height of spring unloaded	do	14.20
Distance between coils	do	1.00
Weight		84 pounds 12 ounces
Inside coil, right-hand spring:		
Exterior diameter of coil	inches	5.55
Diameter of bar	do	1.23
Height of spring unloaded	do	13.30
Distance between coils	do	.50
Weight		34 pounds 4 ounces

Description.	Height.	Load sustained.	Remarks.
	Inches.	*Pounds.*	
First spring	12.25	17,850	
	9.75	45,075	
	9.57	51,500	Closed down.
	9.75	43,500	
	11.80	18,000	
	12.25	13,640	
	11.86	18,000	
	9.75	44,000	
	9.57	51,500	Closed down.
Spring now closed down and so remained for a period of 16 hours, after which the results were as follows:			
	9.59	47,960	
	9.75	43,035	
	11.74	18,000	
	12.25	13,300	
	11.82	18,000	
	9.75	43,525	
	11.76	18,000	
	12.25	13,070	
Second spring	12.25	18,000	
	9.75	44,850	
	9.69	45,700	Closed down.
	9.75	43,525	
	11.82	18,000	
	12.25	13,830	
Third spring	12.25	17,970	
	12.24	18,000	
	9.75	44,940	
	9.61	45,900	Closed down.
	9.75	43,100	
	11.80	18,000	
	12.25	13,230	
Fourth spring	12.25	17,110	
	12.20	18,000	
	9.75	43,650	
	9.63	45,200	Closed down.
	9.75	42,720	
	11.81	18,000	
	12.25	13,450	
Fifth spring	12.25	18,000	
	9.75	47,660	
	9.72	49,500	Closed down.
	9,75	46,970	
	11.86	18,000	
	12.25	13,500	
Sixth spring	12.40	18,000	
	12.25	19,400	
	9.75	48,220	
	9.69	51,900	Closed down.
	9.75	47,040	
	12.00	18,000	
	12.25	15,330	
	10.25	40,200	
Loaded 100 times, compressing to 10".25 and returning to 12".25 height each time.			
	10.25	40,000	
	12.00	18,000	
	12.25	15,230	

Six springs from a lot of 60 received April 12, 1900.

DESCRIPTION OF ONE SPRING.

Outside coil, left-hand spring:		
Exterior diameter of coil	inches	9.05
Diameter of bar	do	1.74
Height of spring unloaded	do	14.30
Distance between coils	do	1.00
Weight		85 pounds 8 ounces
Inside coil, right-hand spring:		
Exterior diameter of coil	inches	5.55
Diameter of bar	do	1.24
Height of spring unloaded	do	13.50
Distance between coils	do	.52
Weight		35 pounds

Description.	Height.	Load sustained.	Remarks.
	Inches.	*Pounds.*	
First spring	12.25	17,200	
	12.15	18,000	
	9.75	46,500	Closed down.
	11.90	18,000	
	12.25	13,930	
Second spring	12.29	18,000	
	12.25	18,570	
	9.75	44,980	
	9.65	46,300	Closed down.
	9.75	43,300	
	11.83	18,000	
	12.25	13,710	
Third spring	12.25	17,870	
	12.24	18,000	
	9.75	44,860	
	9.65	48,600	Closed down.
	9.75	44,030	
	11.85	18,000	
	12.25	14,420	
Fourth spring	12.25	17,900	
	12.23	18,000	
	9.75	45,000	
	9.65	48,200	Closed down.
	9.75	44,300	
	11.84	18,000	
	12.25	13,880	
Fifth spring	12.25	17,000	
	12.17	18,000	
	9.75	43,650	
	9.60	47,300	Closed down.
	9.75	42,100	
	11.79	18,000	
	12.25	12,740	
Sixth spring	12.35	18,000	
	12.25	19,160	
	9.75	46,240	
	9.60	50,300	Closed down.
	9.75	44,750	
	11.90	18,000	
	12.25	14,400	
	11.95	18,000	
	9.75	45,500	
	9.60	50,300	
Spring now closed down and so remained for a period of 42½ hours, after which the results were as follows:			
	9.63	47,270	
	9.75	44,100	
	11.82	18,000	
	12.25	13,650	
	11.88	18,000	
	9.75	45,150	
	11.82	18,000	
	12.25	13,300	
	10.25	38,300	
Loaded 100 times, compressing to 10".25 and returning to 12".25 height each time.			
	10.25	38,700	
	11.85	18,000	
	12.25	13,370	

Six springs from lot of 25 received April 16, 1900.

DESCRIPTION OF ONE SPRING.

Outside coil, left-hand spring:
- Exterior diameter of coil .... inches.. 9.05
- Diameter of bar .... do... 1.74
- Height of spring unloaded .... do... 14.87
- Distance between coils .... do... 1.00
- Weight .... 86¼ pounds

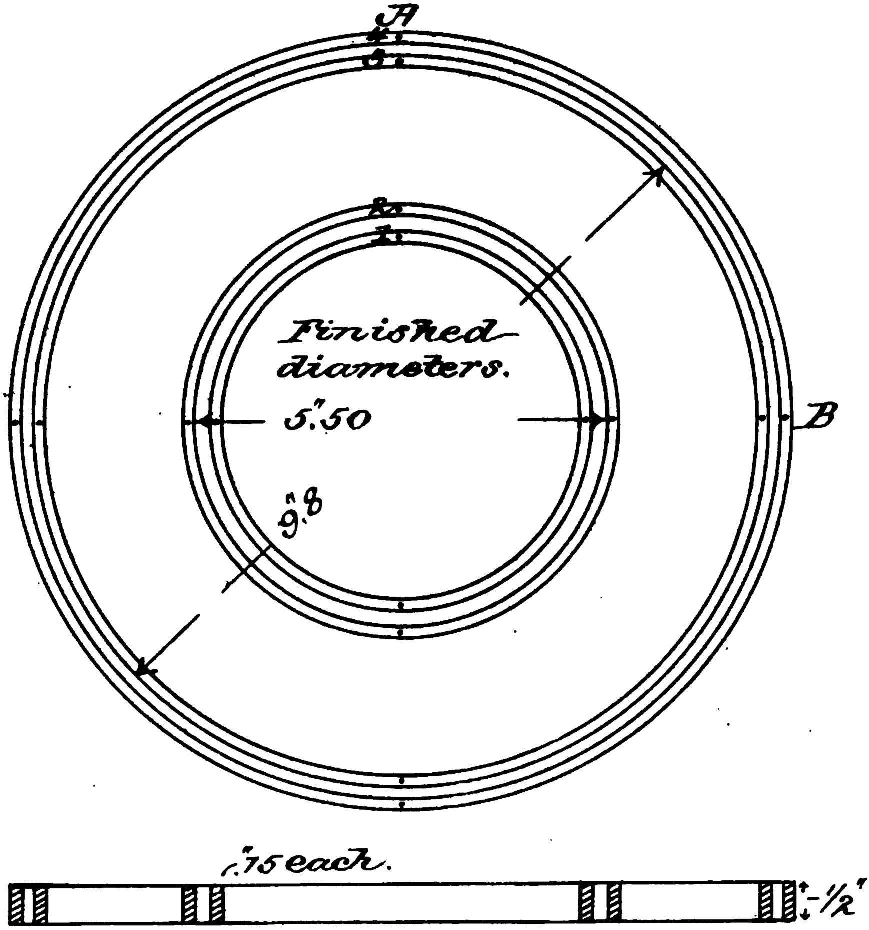
Inside coil, right-hand spring:
- Exterior diameter of coil .... inches.. 5.55
- Diameter of bar .... do... 1.24
- Height of spring unloaded .... do... 18.45
- Distance between coils .... do... .58
- Weight .... 34¼ pounds

Description.	Height.	Load sustained.	Remarks.
	Inches.	*Pounds.*	
First spring	12.44	18,000	
	12.25	20,600	
	9.75	47,500	Closed down.
	11.98	18,000	
	12.25	15,200	
Second spring	12.25	16,860	
	12.15	18,000	
	9.75	41,000	
	9.55	43,200	Closed down.
	9.75	39,800	
	11.65	18,000	
	12.75	12,350	
Third spring	12.30	18,000	
	12.25	18,700	
	9.75	46,300	Closed down.
	11.88	18,000	
	12.25	14,200	
Fourth spring	12.25	17,840	
	12.20	18,000	
	9.75	43,650	
	9.58	45,500	Closed down.
	9.75	42,440	
	11.77	18,000	
	12.25	13,100	
Fifth spring	12.27	18,000	
	12.25	18,200	
	9.75	48,300	
	9.65	54,600	Closed down.
	9.75	44,900	
	11.85	18,000	
	12.25	13,800	
Sixth spring	12.30	18,000	
	12.25	18,550	
	9.75	45,950	
	9.68	47,800	Closed down.
	9.75	44,850	
	11.88	18,000	
	12.25	13,900	
	10.25	38,500	
Loaded 100 times, compressing to 10".25 and returning to 12".25 height each time. Spring now closed down and so remained for a period of 16 hours, after which the results were as follows:			
	9.70	45,090	
	9.75	44,040	
	11.80	18,000	
	12.25	13,300	
	11.87	18,000	
	9.75	45,000	
	11.80	18,000	
	12.25	13,300	
	10.25	38,100	
	11.83	18,000	
	12.25	13,200	

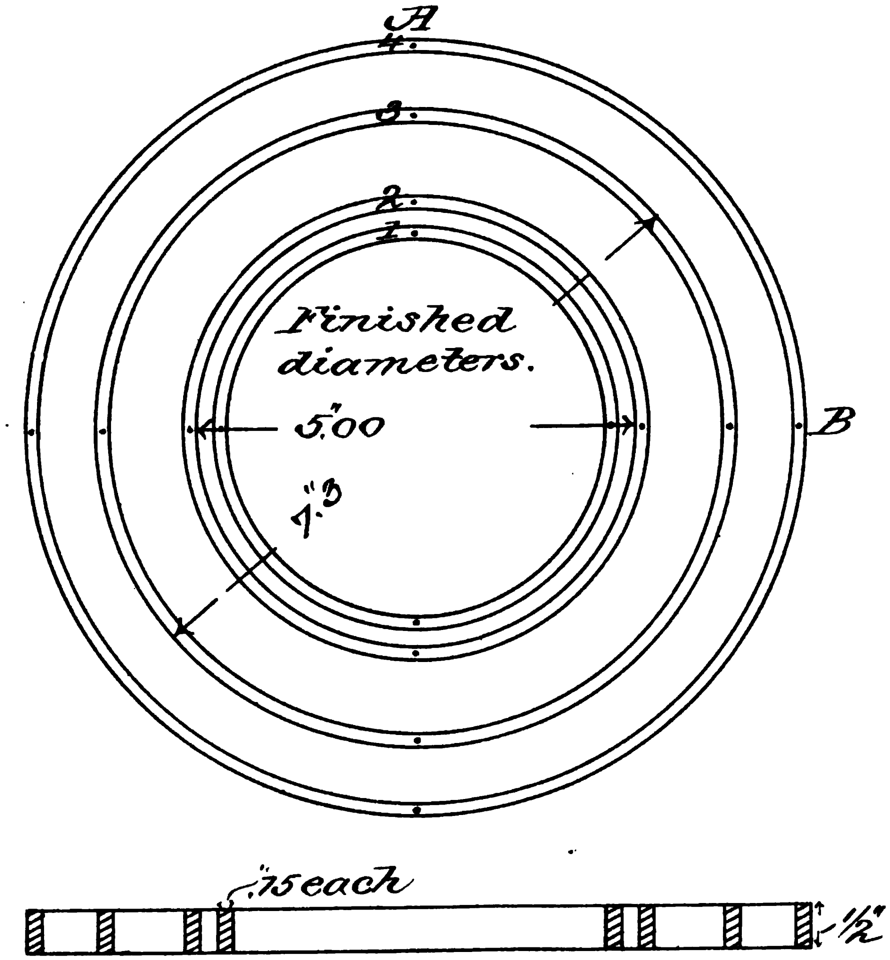
INTERNAL STRAINS IN GUN FORGINGS.

5-inch R.F. Gun Tubes.

Breech Slices.



5-inch R. F. Gun Tubes.
Muzzle Slices.



INTERNAL STRAINS IN GUN FORGINGS.

Internal strains were introduced by heating the forgings and cooling the same rapidly by quenching from the bore.

These determinations were made upon the metal from the tubes of 5-inch R. F. guns.

The initial temperatures of the tubes at the time of quenching, with the rate of flow of the water through the bore at the time of quenching, are given in the following table, together with the initial strains of compression next the bore at both the breech and muzzle ends of the forging.

The temperature of the water used was about 55° F.

No. of tube.	Temperature.	Rate of flow of water per minute.	Compressive stress next the bore per square inch.		Remarks.
			Breech end.	Muzzle end.	
	°F.	Gallons.	Pounds.	Pounds.	
11226 B_1	850 B 900 M		24,300	26,200	Third treatment.
11226 B_1			25,700	29,200	Fourth treatment.
11226 B_2	850 B 900 M		30,400	32,700	Third treatment.
11249 B_2			33,200	31,100	
11272 B_3			33,000	32,500	
11272 B_3				30,200	Muzzle crop end after annealing at 360° F.
11293 B_1			35,900	32,800	
11293 B_2			36,400	32,500	
11293 B_2				24,400	Do.
11293 B_3			31,000	28,900	
11363 B_2			32,600	33,900	
11467 B_3			36,800	31,300	
11467 B_3			34,200	35,200	
11775 B_3	850 B 900 M		27,700	27,800	
11775 B_3			26,700	33,600	Second treatment.
11775 B_3			29,300	29,600	
11775 B_4			28,900	31,400	
11775 B_4			32,400	27,600	
11784 B_2 S 21			29,200	29,000	Usual discard of 1½″.
11784 B_2 S 10			32,000	23,400	Discard, ½″.
11784 B_3			30,400	29,800	
11791 B_3			32,400	28,000	
11794 B_3			38,400	31,800	
11837 B_2			29,500	25,200	
11837 B_2			31,700	29,000	
12485 B_7			30,500	29,900	
12485 B_7			26,500	26,500	Muzzle crop end after annealing at 360° F.
15021 B_6			32,300	30,400	
15021 B_6			36,800	25,600	Second treatment.
15021 B_6			39,200	32,000	

TUBE 11226 B_1.

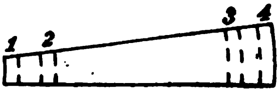
(Third treatment.)

BREECH SLICE.

State of internal strains and stresses at different phases of the slice.

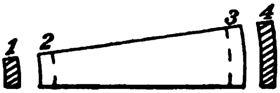
SLICE INTACT.

Interior diameter of slice, 4″.76. Exterior diameter, 10″.47.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.92965		.0040		24,800
2	5.6512		.0020		10,600
3	9.64785	.00185		5,800	
4	10.29615		.00015		440

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5″.50. Exterior diameter, 9″.80.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.93365				
2	5.65005		.00315		16,700
3	9.6470	.0010		3,100	
4 detached	10.2963				

RINGS ALL DETACHED.

2 detached	5.6582				
3 detached	9.6460				

BREECH SLICE.

Interior diameters, 4″.76. Exterior diameter, 10″.47.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches	*Inches.*	*Inches.*
1	4.9298	4.9295	4.92965
2	5.6485	5.6539	5.6512
3	9.6488	9.6469	9.64785
4	10.2999	10.2924	10.29615

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.9344	4.9329	4.93365
2	5.6474	5.6527	5.65005
3	9.6479	9.6461	9.6470
4 detached	10.3076	10.2850	10.2963

RINGS ALL DETACHED.

2 detached	5.6509	5.6555	5.6532
3 detached	9.6454	9.6466	9.6460

Breech strains released.

Rings.	Diameters.		Mean.
	A.	B.	
	Inch.	*Inch.*	*Inch.*
1 detached	+.0046	+.0034	+.0040
2 in slice	−.0011	−.0012	−.00115
3 in slice	−.0009	−.0008	−.00085
4 detached	....	....	....

SECOND TO THIRD PHASE.

2 detached	+.0035	+.0028	+.00315
3 detached	−.0025	+.0005	−.0010

FIRST TO THIRD PHASE.

2 detached	+.0024	+.0016	+.0020
3 detached	−.0034	−.0008	−.00185

TUBE 11226 B_1.

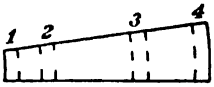
(Third treatment.)

MUZZLE SLICE.

State of internal strains and stresses at different phases of the slice.

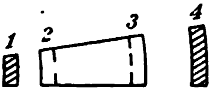
SLICE INTACT.

Interior diameter of slice, 4″.26. Exterior diameter, 8″.62.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.41135		.00385		26,200
2	5.1509		.00145		8,400
3	7.1514	.0021		8,800	
4	8.44125	.00325		11,500	

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5″.00. Exterior diameter, 7″.30.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.4152				
2	5.15065		.0017		9,900
3	7.1514	.0021		8,800	
4 detached	8.4380				

RINGS ALL DETACHED.

2 detached	5.15235				
3	7.1493				

MUZZLE SLICE.

Interior diameter, 4″.26. Exterior diameter, 8″.62.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.4180	4.4097	4.41185
2	5.1478	5.1540	5.1509
3	7.1514	7.1514	7.1514
4	8.4424	8.4401	8.44125

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.4174	4.4130	4.4152
2 detached	5.1476	5.1537	5.15065
3 detached	7.1514	7.1514	7.1514
4 detached	8.4336	8.4424	8.4380

RINGS ALL DETACHED.

2 detached	5.1488	5.1559	5.15235
3 detached	7.1497	7.1489	7.1493

Muzzle strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0044	+.0033	+.00385
2 in slice	.0002	−.0003	−.00025
3 in slice	.0000	.0000	.0000
4 detached	−.0088	+.0023	−.00325

SECOND TO THIRD PHASE.

2 detached	+.0012	+.0022	+.0017
3 detached	−.0017	−.0025	−.0021

FIRST TO THIRD PHASE.

2 detached	+.0010	+.0019	+.00145
3 detached	−.0017	−.0025	−.0021

TUBE 11226 B_1.

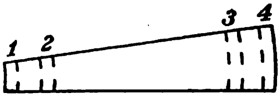
(Fourth treatment.)

BREECH SLICE.

State of internal strains and stresses at different phases of the slice.

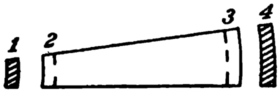
SLICE INTACT.

Interior diameter of slice, 4″.76. Exterior diameter, 10″.46.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.90015		.0042		25,700
2	5.6554		.0031		16,400
3	9.64335	.0030		9,300	
4	10.3120	.0047		13,700	

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5″.50. Exterior diameter, 9″.80.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.90435				
2	5.6544		.0041		21,700
3	9.6426	.00225		7,000	
4 detached	10.3073				

RINGS ALL DETACHED.

2 detached	5.6585				
3 detached	9.64035				

BREECH SLICE.

Interior diameter, 4″.76. Exterior diameter, 10″.46.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.9049	4.8954	4.90015
2	5.6509	5.6599	5.6554
3	9.6465	9.6402	9.64335
4	10.3134	10.3106	10.3120

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.9088	4.8999	4.90435
2	5.6500	5.6588	5.6544
3	9.6460	9.6392	9.6426
4 detached	10.3106	10.3040	10.3073

RINGS ALL DETACHED.

2 detached	5.6535	5.6635	5.6585
3 detached	9.6435	9.6372	9.64035

Breech strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0039	+.0045	+.0042
2 in slice	−.0009	−.0011	−.0010
3 in slice	−.0005	−.0010	−.00075
4 detached	−.0028	−.0066	−.0047

SECOND TO THIRD PHASE.

2 detached	+.0035	+.0047	+.0041
3 detached	−.0025	−.0020	−.00225

FIRST TO THIRD PHASE.

2 detached	+.0026	+.0036	+.0031
3 detached	−.0030	−.0030	−.0030

TUBE 11226 B_1.

(Fourth treatment.)

MUZZLE SLICE.

The bore was eccentric with the outside diameter of the slice. At maximum and minimum places the thickness of the metal was 2″.79 and 2″.43, respectively.

Rings were laid off concentric with the bore, ring 4 being ″.15 wide at the thinnest part, and ″.50 wide at the thickest.

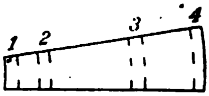
A fire crack existed in this slice at the circumference, penetrating to a depth of ⅛″, and extending longitudinally the length of the slice, ½″.

MUZZLE SLICE.

State of internal strains and tresses at different phases of the slice.

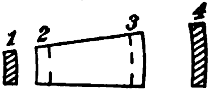
SLICE I ACT.

Interior diameter of slice, 4″.25. Exterior diameter, 9″.47.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.41025		.0043		29,200
2	5.1441		.0016		9,300
3	7.14775	.0008		3,400	
4	8.9837	.00375		12,500	

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5″. Exterior diameter, 7″.30.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.41455				
2	5.14355		.00215		12,500
3	7.14765	.0007		2,900	
4 detached	8.97995				

RINGS ALL DETACHED.

2 detached	5.1457				
3 detached	7.14695				

MUZZLE SLICE.

Interior diameter, 4″.25. Exterior diameter, 9″.47.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.4097	4.4108	4.41025
2	5.1480	5.1402	5.1441
3	7.1452	7.1503	7.14775
4	8.9887	8.9787	8.9837

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.4138	4.4153	4.41455
2	5.1476	5.1395	5.14355
3	7.1451	7.1502	7.14765
4 detached	8.9815	8.9784	8.97995

RINGS ALL DETACHED.

2 detached	5.1503	5.1411	5.1457
3 detached	7.1442	7.1497	7.14695

Muzzle strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0041	+.0045	+.0043
2 in slice	−.0004	−.0007	−.00055
3 in slice	−.0001	−.0001	−.0001
4 detached	−.0072	−.0003	−.00375

SECOND TO THIRD PHASE.

2 detached	+.0027	+.0016	+.00215
3 detached	−.0009	−.0005	−.0007

FIRST TO THIRD PHASE.

2 detached	+.0023	+.0009	+.0016
3 detached	−.0010	−.0006	−.0008

TUBE 11226 B_2.

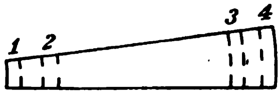
(Third treatment.)

BREECH SLICE.

State of internal strains and stresses at different phases of the slice.

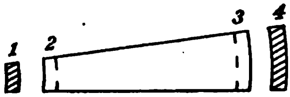
SLICE INTACT.

Interior diameter of slice, 4″.77. Exterior diameter, 10″.50.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.93045	....	.0050	....	30,400
2	5.6393	....	.00385	....	20,500
3	9.64155	.00435	....	13,500	....
4	10.3400	.0020	....	5,800	....

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5″.50. Exterior diameter, 9″.80.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.93545	....	....	....	....
2	5.6381	....	.00505	....	26,900
3	9.6409	.0037	....	11,500	....
4 detached	10.3380	....	....	....	....

RINGS ALL DETACHED.

2 detached	5.64315	....	....	....	....
3 detached	9.6372	....	....	....	....

BREECH SLICE.

Interior diameter, 4″.77. Exterior diameter, 10″.50.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.9289	4.9320	4.93045
2	5.6375	5.6411	5.6393
3	9.6439	9.6392	9.64155
4	10.3414	10.3386	10.3400

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.9341	4.9368	4.93545
2	5.6361	5.6401	5.6381
3	9.6429	9.6389	9.6409
4 detached	10.3474	10.3286	10.3380

RINGS ALL DETACHED.

2 detached	5.6428	5.6435	5.64315
3 detached	9.6396	9.6348	9.6372

Breech strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0052	+.0048	+.0050
2 in slice	−.0014	−.0010	−.0012
2 in slice	−.0010	−.0003	−.00065
4 detached	+.0060	−.0100	−.0020

SECOND TO THIRD PHASE.

2 detached	+.0067	+.0034	+.00505
3 detached	−.0033	−.0041	−.0037

FIRST TO THIRD PHASE.

2 detached	+.0053	+.0024	+.00385
3 detached	−.0043	−.0044	−.00435

TUBE 11226 B_2.

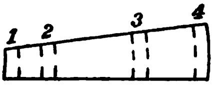
(Third treatment.)

MUZZLE SLICE.

State of internal strains and stresses at different phases of the slice.

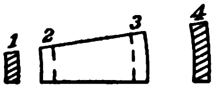
SLICE INTACT.

Interior diameter of slice, 4″.26. Exterior diameter, 8″.57.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.40585		.0048		32,700
2	5.13875		.0009		5,300
3	7.1451	.00245		10,300	
4	8.4147	.00025		890	

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5″.00. Exterior diameter, 7″.30.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.41065				
2	5.1379		.00175		10,200
3	7.1443	.00165		6,900	
4 detached	8.41445				

RINGS ALL DETACHED.

2 detached	5.13965				
3 detached	7.14265				

MUZZLE SLICE.

Interior diameter, 4″.26. Exterior diameter. 8″.57.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.4082	4.4035	4.40585
2	5.1419	5.1356	5.13875
3	7.1473	7.1429	7.1451
4	8.4135	8.4159	8.4147

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.4131	4.4082	4.41065
2	5.1409	5.1349	5.1379
3	7.1461	7.1425	7.1443
4 detached	8.4164	8.4125	8.41445

RINGS ALL DETACHED.

2 detached	5.1419	5.1374	5.13965
3 detached	7.1445	7.1408	7.14265

Muzzle strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0049	+.0047	+.0048
2 in slice	—.0010	—.0007	—.00085
3 in slice	—.0012	—.0004	—.0008
4 detached	+.0029	—.0034	—.00025

SECOND TO THIRD PHASE.

2 detached	+.0010	+.0025	+.00175
3 detached	—.0016	—.0017	—.00165

FIRST TO THIRD PHASE.

2 detached	.0000	+.0018	+.0009
3 detached	—.0028	—.0021	—.00245

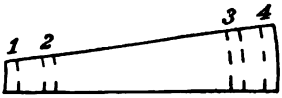
TUBE 11249 B_2.

BREECH SLICE.

State of internal strains and stresses at different phases of the slice.

SLICE INTACT.

Interior diameter of slice, 4''.77. Exterior diameter, 10''.36.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.9200		.00545		33,200
2	5.6499		.0026		13,800
3	9.64305	.0030		9,300	
4					

NOTE.—A longitudinal seam extends through the length of this slice at the exterior, penetrating to a depth of ''.06 at one face and ''.35 at the other face.

Measurements on ring 4 not taken, as the seam nearly separated this ring. It extended at the deepest place into ring 3.

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5″.50. Exterior diameter, 9″.80.

Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.92545				
2	5.6487		.0038		20,200
3	9.64165	.0016		5,000	
4 detached					

RINGS ALL DETACHED.

2 detached	5.6525				
3 detached	9.64005				

Breech Slice.

Interior diameter, 4″.77. Exterior diameter, 10″.36.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.9215	4.9185	4.9200
2	5.6503	5.6495	5.6499
3	9.6445	9.6416	9.64305
4			

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.9266	4.9243	4.92545
2	5.6493	5.6481	5.6487
3	9.6431	9.6402	9.64165
4 detached			

RINGS ALL DETACHED.

2 detached	5.6527	5.6523	5.6525
3 detached	9.6389	9.6412	9.64005

Breech strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0051	+.0058	+.00545
2 in slice	−.0010	−.0014	−.0012
3 in slice	−.0014	−.0014	−.0014
4 detached	....	....	....

SECOND TO THIRD PHASE.

2 detached	+.0034	+.0042	+.0038
3 detached	−.0042	+.0010	−.0016

FIRST TO THIRD PHASE,

2 detached	+.0024	+.0028	+.0026
3 detached	−.0056	−.0004	−.0030

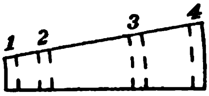
TUBE 11249 B_2.

MUZZLE SLICE.

State of internal strains and stresses at different phases of the slice.

SLICE INTACT.

Interior diameter of slice, 4″.22. Exterior diameter, 8″.50.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.34555	....	.0045	....	31,100
2	5.15235	.0001	....	600	....
3	7.1519	.0018	....	7,500	....
4	8.37295	.00265	....	9,500	....

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5″.00. Exterior diameter, 7″.30.

Rings.	Present mean diameters.	Strains.		Stresses per square inch..	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.35005				
2	5.1516		.00065		3,800
3	7.15095	.00085		3,500	
4 detached	8.3703				

RINGS ALL DETACHED.

2 detached	5.15225				
3 detached	7.1501				

MUZZLE SLICE.

Interior diameter, 4″.22. Exterior diameter, 8″.50.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.3486	4.3425	4.34555
2	5.1523	5.1524	5.15235
3	7.1534	7.1504	7.1519
4	8.3724	8.3735	8.37295

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.3530	4.3471	4.35005
2	5.1518	5.1514	5.1516
3	7.1527	7.1492	7.15095
4 detached	8.3687	8.3719	8.3703

RINGS ALL DETACHED.

2 detached	5.1517	5.1528	5.15225
3 detached	7.1515	7.1487	7.1501

Muzzle strains released.

Rings.	Diameters. A.	Diameters. B.	Diameters. Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0044	+.0046	+.0045
2 in slice	−.0005	−.0010	−.00075
3 in slice	−.0007	−.0012	−.00095
4 detached	−.0037	−.0016	−.00265

SECOND TO THIRD PHASE.

2 detached	−.0001	+.0014	+.00065
3 detached	−.0012	−.0005	−.00085

FIRST TO THIRD PHASE.

2 detached	−.0006	+.0004	−.0001
3 detached	−.0019	−.0017	−.0018

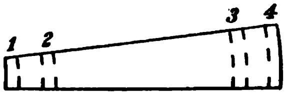
TUBE 11272 B_3.

BREECH SLICE.

State of internal strains and stresses at different phases of the slice.

SLICE INTACT.

Interior diameter of slice, 4″.72. Exterior diameter, 10″.44.



Rings.	Present mean diameters.	Strains. Tension.	Strains. Compression.	Stresses per square inch. Tension.	Stresses per square inch. Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.8667		.00635		33,000
2	5.64815		.0027		14,300
3	9.6472	.00445		13,800	
4	10.2806		.00115		3,400

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5″.50. Exterior diameter, 9″.80.

Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.87205				
2	5.64685		.0040		21,200
3	9.6462	.00345		10,700	
4 detached	10.28165				

RINGS ALL DETACHED.

2 detached	5.65085				
3 detached	9.64275				

BREECH SLICE.

Interior diameter, 4″.72. Exterior diameter, 10″.44.
Original diameter of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.8654	4.8680	4.8667
2	5.6499	5.6464	5.64815
3	9.6479	9.6465	9.6472
4	10.2779	10.2831	10.2805

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.8705	4.8736	4.87205
2	5.6485	5.6452	5.64685
3	9.6469	9.6455	9.6462
4 detached	10.2779	10.2854	10.28165

RINGS ALL DETACHED.

2 detached	5.6534	5.6483	5.65085
3 detached	9.6424	9.6431	9.64275

Breech strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0051	+.0056	+.00535
2 in slice	−.0014	−.0012	−.0013
3 in slice	−.0010	−.0010	−.0010
4 detached	−.0000	−.0023	+.00115

SECOND TO THIRD PHASE.

2 detached	+.0049	+.0031	+.0040
3 detached	−.0045	−.0024	−.00345

FIRST TO THIRD PHASE.

2 detached	+.0035	+.0019	+.0027
3 detached	−.0055	−.0084	−.00445

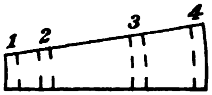
TUBE 11272 B_3.

MUZZLE SLICE.

State of internal strains and stresses at different phases of the slice.

SLICE INTACT.

Interior diameter of slice, 4″.27. Exterior diameter, 8″.93.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.42525		.0048		32,500
2	5.1502		.00245		14,200
3	7.1433	.0025		10,500	
4	8.79575	.0060		20,500	

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5″.00. Exterior diameter, 7″.30.

Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.43005				
2	5.14975		.0029		16,900
3	7.14305	.00225		9,400	
4 detached	8.78975				
RINGS ALL DETACHED.					
2 detached	5.15265				
3 detached	7.1408				

MUZZLE SLICE.

Interior diameter, 4″.27. Exterior diameter, 8″.93.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.4243	4.4262	4.42525
2	5.1513	5.1491	5.1502
3	7.1435	7.1431	7.1433
4	8.7941	8.7974	8.79575

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.4290	4.4311	4.43005
2	5.1509	5.1486	5.14975
3	7.1432	7.1429	7.14305
4 detached	8.7940	8.7855	8.78975
RINGS ALL DETACHED.			
2 detached	5.1534	5.1519	5.15265
3 detached	7.1416	7.1400	7.1408

Muzzle strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0052	+.0044	+.0048
2 in slice	−.0010	−.0014	−.0012
3 in slice	−.0004	−.0006	−.0005
4 detached	−.0079	+.0028	−.00255

SECOND TO THIRD PHASE.

2 detached	+.0028	+.0027	+.00275
3 detached	−.0034	−.0006	−.0020

FIRST TO THIRD PHASE.

2 detached	+.0018	+.0013	+.00155
3 detached	−.0038	−.0012	−.0025

TUBE 11293 B_2.

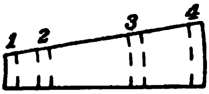
Muzzle crop end of tube after annealing at 360° F.

MUZZLE SLICE.

State of internal strains and stresses at different phases of the slice.

SLICE INTACT.

Interior diameter of slice, 4″.27. Exterior diameter, 8″.64.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.42175	....	.0036	....	24,400
2	5.1441	....	.00115	....	6,700
3	7.1444	.0015	....	6,300	....
4	8.4653	.00045	....	1,600	....

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5″.00. Exterior diameter, 7″.30.

Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.42535				
2 detached	5.1431		.00215		12,500
3 detached	7.14365	.00075		3,100	
4 detached	8.46485				

RINGS ALL DETACHED.

2 detached	5.14525				
3 detached	7.1429				

Muzzle Slice.

Interior diameter, 4″.27. Exterior diameter, 8″.64.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.4220	4.4215	4.42175
2	5.1466	5.1416	5.1441
3	7.1469	7.1419	7.1444
4	8.4639	8.4667	8.4653

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.4255	4.4252	4.42535
2	5.1459	5.1403	5.1431
3	7.1463	7.1410	7.14365
4 detached	8.4524	8.4773	8.46485

RINGS ALL DETACHED.

2 detached	5.1483	5.1422	5.14525
3 detached	7.1459	7.1399	7.1429

Muzzle strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0035	+.0037	+.0036
2 in slice	−.0007	−.0013	−.0010
3 in slice	−.0006	−.0009	−.00075
4 detached	−.0115	+.0106	−.00045

SECOND TO THIRD PHASE.

2 detached	+.0024	+.0019	+.00215
3 detached	−.0004	−.0011	−.00075

FIRST TO THIRD PHASE.

2 detached	+.0017	+.0006	+.00115
3 detached	−.0010	−.0020	−.0015

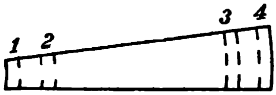
TUBE 11293 B_3.

BREECH SLICE.

State of internal strains and stresses at different phases of the slice.

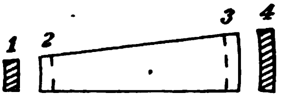
SLICE INTACT.

Interior diameter of slice, 4″.84. Exterior diameter, 10″.48.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.98165		.00515		31,000
2	5.6526		.00315		16,700
3	9.64535	.0026		8,100	
4	10.29185		.0004		1,200

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5″.50. Exterior diameter, 9″.80.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.9868				
2	5.6513		.00445		23,600
3	9.6448	.00205		6,400	
4 detached	10.29225				

RINGS ALL DETACHED.

2 detached	5.6557				
3 detached	9.64275				

BREECH SLICE.

Interior diameter, 4″.84. Exterior diameter, 10″.48.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.9823	4.9810	4.98165
2	5.6570	5.6482	5.6526
3	9.6435	9.6472	9.64535
4	10.2921	10.2916	10.29185

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.9883	4.9853	4.9868
2	5.6560	5.6466	5.6513
3	9.6432	9.6464	9.6448
4 detached	10.2882	10.2963	10.29225

RINGS ALL DETACHED.

2 detached	5.6603	5.6512	5.65575
3 detached	9.6420	9.6435	9.64275

Breech strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0060	+.0043	+.00515
2 in slice	−.0010	-.0016	−.0013
3 in slice	−.0003	−.0008	−.00055
4 detached	−.0039	+.0047	+.0004

SECOND TO THIRD PHASE.

2 detached	+.0043	+.0046	+.00445
3 detached	−.0012	−.0029	−.00205

FIRST TO THIRD PHASE.

2 detached	+.0033	+.0030	+.00315
3 detached	−.0015	−.0037	-.0026

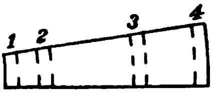
Tube 11293 B_3.

Muzzle Slice.

State of internal strains and stresses at different phases of the slice.

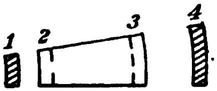
SLICE INTACT.

Interior diameter of slice, 4″.26. Exterior diameter, 8″.76.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.4094		.00425		28,900
2	5.14405		.0023		13,400
3	7.14625	.0014		5,900	
4	8.5693		.00025		900

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5″.00. Exterior diameter, 7″.30.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.41365				
2	5.1434		+.00295		17,200
3	7.1458	−.00095		4,000	
4 detached	8.56955				

RINGS ALL DETACHED.

2 detached	5.14635				
3 detached	7.14485				

Muzzle Slice.

Interior diameter, 4″.26. Exterior diameter, 8″.76.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.4072	4.4116	4.4094
2	5.1425	5.1456	5.14405
3	7.1450	7.1475	7.14625
4	8.5700	8.5686	8.5693

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.4111	4.4162	4.41365
2	5.1420	5.1448	5.1434
3	7.1447	7.1469	7.1458
4 detached	8.5623	8.5768	8.56955

RINGS ALL DETACHED.

2 detached	5.1450	5.1477	5.14635
3 detached	7.1419	7.1478	7.14485

Muzzle strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0039	+.0046	+.00425
2 in slice	−.0005	−.0008	−.00065
3 in slice	−.0003	−.0006	−.00045
4 detached	−.0077	+.0082	+.00025

SECOND TO THIRD PHASE.

2 detached	+.0030	+.0029	+.00295
3 detached	−.0028	+.0009	−.00095

FIRST TO THIRD PHASE.

2 detached	+.0025	+.0021	+.0023
3 detached	−.0031	+.0003	−.0014

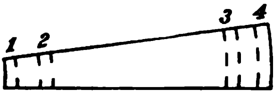
TUBE 11363 B_2.

BREECH SLICE.

State of internal strains and stresses at different phases of the slice.

SLICE INTACT.

Interior diameter of slice, 4″.74. Exterior diameter, 10″.46.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.87695		.0053		32,600
2	5.64655		.0003		1,600
3	9.64585	.0015		4,700	
4	10.3025		.0017		4,900

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5″.50. Exterior diameter, 9″.80.

Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.88225				
2	5.64555		.0013		6,900
3	9.6450	.00065		2,000	
4 detached	10.30425				

RINGS ALL DETACHED.

2 detached	5.64685				
3 detached	9.64435				

BREECH SLICE.

Interior diameter, 4″.74. Exterior diameter, 10″.46.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.8768	4.8771	4.87695
2	5.6524	5.6407	5.64655
3	9.6467	9.6450	9.64585
4	10.2981	10.3070	10.30255

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.8816	4.8829	4.88225
2	5.6514	5.6397	5.64555
3	9.6459	9.6441	9.6450
4 detached	10.2979	10.3106	10.30425

RINGS ALL DETACHED.

2 detached	5.6533	5.6404	5.64685
3 detached	9.6454	9.6433	9.64435

Breech strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0048	+.0058	+.0053
2 in slice	−.0010	−.0010	−.0010
3 in slice	−.0008	−.0009	−.00085
4 detached	−.0002	+.0036	+.0017

SECOND TO THIRD PHASE.

2 detached	+.0019	+.0007	+.0013
3 detached	−.0005	−.0008	−.0015

FIRST TO THIRD PHASE.

2 detached	+.0009	−.0003	−.0003
3 detached	−.0013	−.0017	−.0015

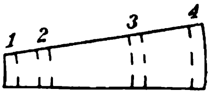
TUBE 11363 B_2.

MUZZLE SLICE.

State of internal strains and stresses at different phases of the slice.

SLICE INTACT.

Interior diameter of slice, 4″.23. Exterior diameter, 8″.63.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.3795	....	.00495	....	33,900
2	5.1458	....	.00215	....	12,500
3	7.1332	.00265	....	11,100	....
4	8.3723	.00375	....	13,400	....

Bore and exterior surface of this slice eccentric. Ring 4, maximum thickness, ″.24; minimum thickness, ″.15.

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5″.00. Exterior diameter, 7″.30.

Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.38445				
2	5.14545		.0025		14,500
3	7.1328	.00225		9,500	
4 detached	8.36855				
RINGS ALL DETACHED.					
2 detached	5.14795				
3 detached	7.13055				

MUZZLE SLICE.

Interior diameter, 4″.23. Exterior diameter, 8″.63.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.3805	4.3785	4.3795
2	5.1437	5.1479	5.1458
3	7.1375	7.1289	7.1332
4	8.3730	8.3716	8.3723

Rings 1 and 4 detached, rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.3858	4.3831	4.38445
2	5.1432	5.1477	5.14545
3	7.1373	7.1283	7.1328
4 detached	8.3577	8.3794	8.36855
RINGS ALL DETACHED.			
2 detached	5.1462	5.1497	5.14795
3 detached	7.1363	7.1248	7.13055

Muzzle strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0053	+.0046	+.00495
2 in slice	−.0005	−.0002	−.00035
3 in slice	−.0002	−.0006	−.0004
4 detached	−.0153	+.0078	−.00375

SECOND TO THIRD PHASE.

2 detached	+.0030	+.0020	+.0025
3 detached	−.0010	−.0035	−.00225

FIRST TO THIRD PHASE.

2 detached	+.0025	+.0018	+.00215
3 detached	−.0012	−.0041	−.00265

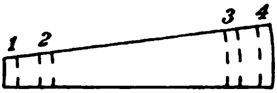
TUBE 11467 B_3.

BREECH SLICE.

State of internal strains and stresses at different phases of the slice.

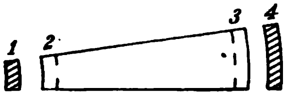
SLICE INTACT.

Interior diameter of slice, 4″.74. Exterior diameter, 10″.46.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.8862		.0060		36,800
2	5.64545		.00105		5,600
3	9.6404	.0027		8,400	
4	10.3074	.0021		6,100	

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5″.50. Exterior diameter, 9″.80.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.8922				
2	5.64385		.00265		14,100
3	9.63935	.00165		5,100	
4 detached	10.3053				

RINGS ALL DETACHED.

2 detached	5.6465				
3 detached	9.6377				

Breech Slice.

Interior diameter, 4″.74. Exterior diameter, 10″.46.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.8890	4.8834	4.8862
2	5.6441	5.6468	5.64545
3	9.6411	9.6397	9.6404
4	10.3123	10.3025	10.3074

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.8938	4.8906	4.8922
2	5.6425	5.6452	5.64385
3	9.6400	9.6387	9.63935
4 detached	10.3118	10.2988	10.3053

RINGS ALL DETACHED.

2 detached	5.6459	5.6471	5.6465
3 detached	9.6370	9.6384	9.6377

Breech strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0048	+.0072	+.0060
2 in slice	−.0016	−.0016	−.0016
3 in slice	−.0011	−.0010	−.00105
4 detached	−.0005	−.0037	−.0021

SECOND TO THIRD PHASE.

2 detached	+.0034	+.0019	+.00265
3 detached	−.0030	−.0003	−.00165

FIRST TO THIRD PHASE.

2 detached	+.0018	+.0003	+.00105
3 detached	−.0041	−.0013	−.0027

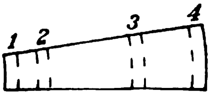
TUBE 11467 B_3.

MUZZLE SLICE.

State of internal strains and stresses at different phases of the slice.

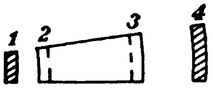
SLICE INTACT.

Interior diameter of slice, 4″.22. Exterior diameter, 8″.57.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.35935	....	.00455	....	31,300
2	5.1550	....	.0028	....	16,300
3	7.14455	.00315	....	13,200	....
4	8.40815	.00445	....	15,900	....

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5".00. Exterior diameter, 7".30.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.3639				
2	5.15445		.00335		19,500
3	7.14445	.00805		12,800	
4 detached	8.4037				

RINGS ALL DETACHED.

2 detached	5.1578				
3 detached	7.1414				

MUZZLE SLICE.

Interior diameter, 4".22. Exterior diameter, 8".57.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.3580	4.3607	4.35935
2	5.1502	5.1598	5.1550
3	7.1431	7.1460	7.14455
4	8.4085	8.4078	8.40815

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.3626	4.3652	4.3639
2	5.1498	5.1591	5.15445
3	7.1431	7.1458	7.14445
4 detached	8.4064	8.4010	8.4037

RINGS ALL DETACHED.

2 detached	5.1531	5.1625	5.1578
3 detached	7.1403	7.1425	7.1414

Muzzle strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0046	+.0045	+.00455
2 in slice	−.0004	−.0007	−.00055
3 in slice	.0000	−.0002	−.0001
4 detached	−.0021	−.0068	−.00445

SECOND TO THIRD PHASE.

2 detached	+.0033	+.0034	+.00335
3 detached	−.0028	−.0033	−.00305

FIRST TO THIRD PHASE.

2 detached	+.0029	+.0027	+.0028
3 detached	−.0028	−.0035	−.00315

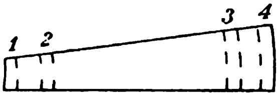
TUBE 11467 B_3.

BREECH SLICE.

State of internal strains and stresses at different phases of the slice.

SLICE INTACT.

Interior diameter of slice, 4″.74. Exterior diameter, 10″.47.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.8676	....	.00555	....	34,200
2	5.6516	....	.00185	....	9,800
3	9.6455	.0035	....	10,900	....
4	10.31405	.00205	....	6,000	....

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5″.50. Exterior diameter, 9″.80.

Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.87315				
2	5.65035		.0031		16,400
3	9.64495	.00295		9,100	
4 detached	10.3120				

RINGS ALL DETACHED.

2 detached	5.65345				
3 detached	9.6420				

BREECH SLICE.

Interior diameter, 4″.74. Exterior diameter, 10″.47.
Original diameter of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.8624	4.8728	4.8676
2	5.6477	5.6555	5.6516
3	9.6444	9.6466	9.6455
4	10.3101	10.3180	10.31405

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.8682	4.8781	4.87315
2	5.6464	5.6543	5.65035
3	9.6441	9.6458	9.64495
4 detached	10.3064	10.3176	10.3120

RINGS ALL DETACHED.

2 detached	5.6492	5.6577	5.65345
3 detached	9.6425	9.6415	9.6420

Breech strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0058	+.0053	+.00555
2 in slice	−.0013	−.0012	−.00125
3 in slice	−.0003	−.0008	−.00055
4 detached	−.0037	−.0004	−.00205

SECOND TO THIRD PHASE.

2 detached	+.0028	+.0034	+.0031
3 detached	−.0016	−.0043	−.00295

FIRST TO THIRD PHASE.

2 detached	+.0015	+.0022	+.00185
3 detached	−.0019	−.0051	−.0035

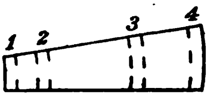
TUBE 11467 B_3.

MUZZLE SLICE.

State of internal strains and stresses at different phases of the slice.

SLICE INTACT.

Interior diameter of slice, 4″.22. Exterior diameter, 8″.57.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.34285	....	.0051	....	35,200
2	5.14745	....	.00085	....	4,900
3	7.1526	.0025	....	10,500	....
4	8.40565	.00205	....	7,300	....

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5″.00. Exterior diameter, 7″.50.

Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.34795				
2	5.1467		.0016		9,300
3	7.15185	.00175		7,300	
4 detached	8.4036				

RINGS ALL DETACHED.

2 detached	5.1483				
3 detached	7.1501				

MUZZLE SLICE.

Interior diameter, 4″.22. Exterior diameter, 8″.57.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.3432	4.3425	4.34285
2	5.1534	5.1415	5.14745
3	7.1563	7.1489	7.1526
4	8.4100	8.4013	8.40565

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.3483	4.3476	4.34795
2	5.1526	5.1408	5.1467
3	7.1555	7.1482	7.15185
4 detached	8.4142	8.3930	8.4036

RINGS ALL DETACHED.

2 detached	5.1535	5.1431	5.1483
3 detached	7.1539	7.1463	7.1501

Muzzle strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0051	+.0051	+.0051
2 in slice	−.0008	−.0007	−.00075
3 in slice	−.0008	−.0007	−.00075
4 detached	+.0042	−.0083	−.00205

SECOND TO THIRD PHASE.

2 detached	+.0009	+.0023	+.0016
3 detached	−.0016	−.0019	−.00175

FIRST TO THIRD PHASE.

2 detached	+.0001	+.0016	+.00085
3 detached	−.0024	−.0026	−.0025

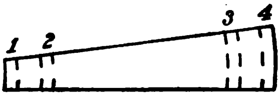
TUBE 11775 B_3.

BREECH SLICE.

State of internal strains and stresses at different phases of the slice.

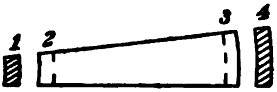
SLICE INTACT.

Interior diameter of slice, 4″.76. Exterior diameter, 10″.45.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.93075	....	.00455	....	27,700
2	5.6453	....	.0016	....	8,500
3	9.6379	.0034	....	10,500	....
4	10.26475	.00075	....	2,200	....

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5".50. Exterior diameter, 9".80.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.9353				
2	5.6442		.0027		14,300
3	9.63715	.00265		8,200	
4 detached	10.2640				

RINGS ALL DETACHED.

2 detached	5.6469				
3 detached	9.6345				

BREECH SLICE.

Interior diameter, 4".76. Exterior diameter, 10".45.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.9277	4.9338	4.93075
2	5.6451	5.6455	5.6453
3	9.6399	9.6359	9.6379
4	10.2607	10.2688	10.26475

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.9321	4.9385	4.9353
2	5.6439	5.6445	5.6442
3	9.6392	9.6351	9.63715
4 detached	10.2730	10.2550	10.2640

RINGS ALL DETACHED.

2 detached	5.6458	5.6480	5.6469
3 detached	9.6367	9.6323	9.6345

Breech strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0044	+.0047	+.00455
2 in slice	−.0012	−.0010	−.0011
3 in slice	−.0007	−.0008	−.00075
4 detached	+.0123	−.0138	−.00075

SECOND TO THIRD PHASE.

2 detached	+.0019	+.0035	+.0027
3 detached	−.0025	−.0028	−.00265

FIRST TO THIRD PHASE.

2 detached	+.0007	+.0025	+.0016
3 detached	−.0032	−.0036	−.0034

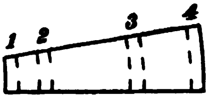
TUBE 11775 B_3.

MUZZLE SLICE.

State of internal strains and stresses at different phases of the slice.

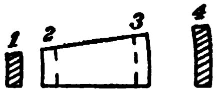
SLICE INTACT.

Interior diameter of slice, 4″.26. Exterior diameter, 9″.17.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.4219		.0041		27,800
2	5.14545		.0039		22,700
3	7.1460	.00275		11,500	
4	9.0031	.00075		2,400	

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5″.00. Exterior diameter, 7″.30.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.4260				
2	5.1452		.00415		24,200
3	7.14605	.0028		11,700	
4 detached	9.00235				

RINGS ALL DETACHED.

2 detached	5.14985				
3 detached	7.14325				

MUZZLE SLICE.

Interior diameter, 4″.26. Exterior diameter, 9″.17.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.4241	4.4197	4.4219
2	5.1463	5.1446	5.14545
3	7.1441	7.1479	7.1460
4	9.0062	9.0000	9.0031

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.4285	4.4235	4.4260
2	5.1456	5.1448	5.1452
3	7.1437	7.1484	7.14605
4 detached	9.0172	8.9875	9.00235

RINGS ALL DETACHED.

2 detached	5.1511	5.1476	5.14985
3 detached	7.1415	7.1450	7.14325

Muzzle strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0044	+.0038	+.0041
2 in slice	−.0007	+.0002	−.00025
3 in slice	−.0004	+.0005	+.00005
4 detached	+.0110	−.0125	−.00075

SECOND TO THIRD PHASE.

2 detached	+.0055	+.0028	+.00415
3 detached	−.0022	−.0034	−.0028

FIRST TO THIRD PHASE.

2 detached	+.0048	+.0030	+.0039
3 detached	−.0026	−.0029	−.00275

Tube 11775 B_3.

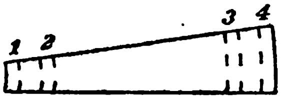
(Second treatment.)

Breech Slice.

State of internal strains and stresses at different phases of the slice.

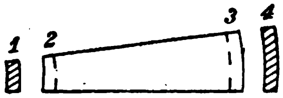
SLICE INTACT.

Interior diameter of slice, 4″.76. Exterior diameter, 10″.45.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.93615		.0044		26,700
2	5.6577		.00395		20,900
3	9.64875	.0032		9,900	
4	10.26335	.0027		7,800	

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5″.50. Exterior diameter, 9″.80.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.94055				
2	5.65645		.0052		27,600
3	9.64815	.0026		8,100	
4 detached	10.26065				

RINGS ALL DETACHED.

2 detached	5.66165				
3 detached	9.64555				

BREECH SLICE.

Interior diameter, 4″.76. Exterior diameter, 10″.45.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.9373	4.9350	4.93615
2	5.6528	5.6626	5.6577
3	9.6449	9.6526	9.64875
4	10.2632	10.2635	10.26335

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.9411	4.9400	4.94055
2	5.6513	5.6616	5.65645
3	9.6441	9.6522	9.64815
4 detached	10.2648	10.2565	10.26065

RINGS ALL DETACHED.

2 detached	5.6570	5.6663	5.66165
3 detached	9.6403	9.6508	9.64555

Breach strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0038	+.0050	+.0044
2 in slice	−.0015	−.0010	−.00125
3 in slice	−.0008	−.0004	−.0006
4 detached	+.0016	−.0070	−.0027

SECOND TO THIRD PHASE.

2 detached	+.0057	+.0047	+.0052
3 detached	−.0038	−.0014	−.0026

FIRST TO THIRD PHASE.

2 detached	+.0042	+.0037	+.00395
3 detached	−.0046	−.0018	−.0032

TUBE 11775 B_3.

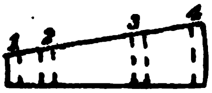
(Second treatment.)

MUZZLE SLICE.

State of internal strains and stresses at different phases of the slice.

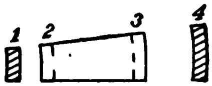
SLICE INTACT.

Interior diameter of slice, 4″.26. Exterior diameter, 9″.17.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.42555		.00495		33,600
2	5.1588		.0019		11,000
3	7.1394	.00205		8,600	
4	9.0177	.00035		1,200	

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5″.00. Exterior diameter, 7″.30.



Rings.	Present mean diameter.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.4305				
2	5.1580		.0027		15,700
3	7.1390	.00165		6,900	
4 detached	9.01735				

RINGS ALL DETACHED.

2 detached	5.1607				
3 detached	7.13735				

MUZZLE SLICE.

Interior diameter, 4″.26. Exterior diameter, 9″.17.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.4247	4.4264	4.42555
2	5.1611	5.1565	5.1588
3	7.1404	7.1384	7.1394
4	9.0179	9.0175	9.0177

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.4291	4.4319	4.4305
2	5.1600	5.1560	5.1580
3	7.1398	7.1382	7.1390
4 detached	9.0275	9.0072	9.01735

RINGS ALL DETACHED.

2 detached	5.1629	5.1585	5.1607
3 detached	7.1382	7.1365	7.13735

Muzzle strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0044	+.0056	+.00495
2 in slice	−.0011	−.0005	−.0008
3 in slice	−.0006	−.0002	−.0004
4 detached	+.0096	−.0103	−.00035

SECOND TO THIRD PHASE.

2 detached	+.0029	+.0025	+.0027
3 detached	−.0016	−.0017	−.00165

FIRST TO THIRD PHASE.

2 detached	+.0018	+.0020	+.0019
3 detached	−.0022	−.0019	−.00205

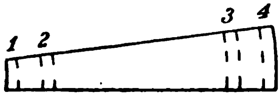
TUBE 11775 B$_2$.

BREECH SLICE.

State of internal strains and stresses at different phases of the slice.

SLICE INTACT.

Interior diameter of slice, 4″.76. Exterior diameter, 10″.45.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.9135		.0048		29,300
2	5.6531		.00245		13,000
3	9.65415	.0041		12,700	
4	10.27405	.00375		10,900	

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5″.50. Exterior diameter, 9″.80.

Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.9183				
2	5.6517		.00385		20,400
3	9.6532	.00316		9,800	
4 detached	10.2703				

RINGS ALL DETACHED.

1 detached	5.65555				
2 detached	9.65005				

BREECH SLICE.

Interior diameter, 4″.76. Exterior diameter, 10″.45.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.9135	4.9135	4.9135
2	5.6515	5.6547	5.6531
3	9.6514	9.6569	9.65415
4	10.2753	10.2728	10.27405

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.9180	4.9186	4.9183
2	5.6499	5.6535	5.6517
3	9.6504	9.6560	9.6532
4 detached	10.2793	10.2613	10.2703

RINGS ALL DETACHED.

2 detached	5.6540	5.6571	5.65555
3 detached	9.6487	9.6514	9.65005

Breech strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0045	+.0051	+.0048
2 in slice	−.0016	−.0012	−.0014
3 in slice	−.0010	−.0009	−.00095
4 detached	+.0040	−.0115	−.00375

SECOND TO THIRD PHASE.

2 detached	+.0041	+.0036	+.00385
3 detached	−.0017	−.0046	−.00315

FIRST TO THIRD PHASE.

2 detached	+.0025	+.0024	+.00245
3 detached	−.0027	−.0055	−.0041

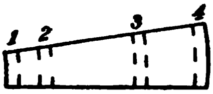
TUBE 11775 B_3.

MUZZLE SLICE.

State of internal strains and stresses at different phases of the slice.

SLICE INTACT.

Interior diameter of slice, 4″.27. Exterior diameter, 8″.57.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.4043	....	.00435	....	29,600
2	5.14875	....	.00215	....	12,500
3	7.15625	.00255	....	10,600	....
4	8.36285	.0051	....	18,300	....

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5″.00. Exterior diameter, 7″.30.

Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.40865				
2	5.14825		.00265		15,400
3	7.15515	.00145		6,100	
4 detached	8.3577				

RINGS ALL DETACHED.

2 detached	5.1509				
3 detached	7.1537				

MUZZLE SLICE.

Interior diameter, 4″.27. Exterior diameter, 8″.57.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.4007	4.4079	4.4043
2	5.1480	5.1495	5.14875
3	7.1589	7.1536	7.15625
4	8.3612	8.3645	8.36285

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.4054	4.4119	4.40865
2	5.1475	5.1490	5.14825
3	7.1568	7.1535	7.15515
4 detached	8.3500	8.3655	8.35775

RINGS ALL DETACHED.

2 detached	5.1500	5.1518	5.1509
3 detached	7.1565	7.1509	7.1537

Muzzle strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0047	+.0040	+.00435
2 in slice	−.0005	−.0005	−.0005
3 in slice	−.0021	−.0001	−.0011
4 detached	−.0112	+.0010	−.0051

SECOND TO THIRD PHASE.

2 detached	+.0025	+.0028	+.00265
3 detached	−.0003	−.0026	−.00145

FIRST TO THIRD PHASE.

2 detached	+.0020	+.0023	+.00215
3 detached	−.0024	−.0027	−.00255

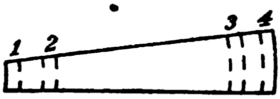
TUBE 11775 B_4.

BREECH SLICE.

State of internal strains and stresses at different phases of the slice.

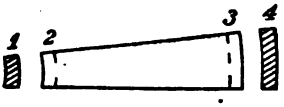
SLICE INTACT.

Interior diameter of slice, 4″.72. Exterior diameter, 10″.44.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.87685		.0047		28,900
2	5.64325		.0022		11,700
3	9.65075	.0030		9,300	
4	10.2761	.00045		1,300	

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5″.50. Exterior diameter, 9″.80.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.88155				
2	5.64205		.0034		18,100
3	9.65005	.0023		7,100	
4 detached	10.27565				

RINGS ALL DETACHED.

2 detached	5.64545				
3 detached	9.64775				

BREECH SLICE.

Interior diameter, 4″.72. Exterior diameter, 10″.44.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.8794	4.8743	4.87685
2	5.6474	5.6391	5.64325
3	9.6474	9.6541	9.65075
4	10.2790	10.2732	10.2761

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.8545	4.8786	4.88155
2	5.6462	5.6879	5.64205
3	9.6467	9.6534	9.65005
4 detached	10.2808	10.2705	10.27565

RINGS ALL DETACHED.

2 detached	5.6487	5.6422	5.64545
3 detached	9.6446	9.6509	9.64775

Breech strains released.

Rings.	Diameter.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0051	+.0043	+.0047
2 in slice	−.0012	−.0012	−.0012
3 in slice	−.0007	−.0007	−.0007
4 detached	+.0018	−.0027	−.00045

SECOND TO THIRD PHASE.

2 detached	+.0025	+.0043	+.0034
3 detached	−.0021	−.0025	−.0023

FIRST TO THIRD PHASE.

2 detached	+.0013	+.0031	+.0022
3 detached	−.0028	−.0032	−.0030

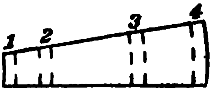
TUBE 11775 B_4.

MUZZLE SLICE.

State of internal strains and stresses at different phases of the slice.

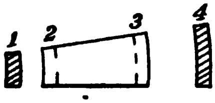
SLICE INTACT.

Interior diameter of slice, 4″.25. Exterior diameter, 8″.61.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.3985		.0046		31,400
2	5.1488		.00245		14,300
3	7.1411	.00235		9,900	
4	8.4447	.0006		2,100	

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5".00. Exterior diameter, 7".30.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.3981				
2	5.14805		.0032		18,600
3	7.1404	.00165		6,900	
4 detached	8.4441				

RINGS ALL DETACHED.

2 detached	5.15125				
3 detached	7.13875				

Muzzle Slice.

Interior diameter, 4".25. Exterior diameter, 8".61.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.3945	4.3925	4.3935
2	5.1461	5.1515	5.1488
3	7.1443	7.1379	7.1411
4	8.4439	8.4455	8.4447

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.3989	4.3973	4.3981
2	5.1451	5.1510	5.14805
3	7.1434	7.1374	7.1404
4 detached	8.4497	8.4385	8.4441

RINGS ALL DETACHED.

2 detached	5.1485	5.1540	5.15125
3 detached	7.1415	7.1360	7.13875

Muzzle strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0044	+.0048	+.0046
2 in slice	−.0010	−.0005	−.00075
3 in slice	−.0009	−.0005	−.0007
4 detached	+.0058	−.0070	−.0006

SECOND TO THIRD PHASE.

2 detached	+.0034	+.0030	+.0032
3 detached	−.0019	−.0014	−.00165

FIRST TO THIRD PHASE.

2 detached	+.0024	+.0025	+.00245
3 detached	−.0028	−.0019	−.00235

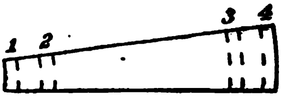
TUBE 11775 B_4.

BREECH SLICE.

State of internal strains and stresses at different phases of the slice.

SLICE INTACT.

Interior diameter of slice, 4″.72. Exterior diameter, 10″.42.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.8611		.00525		82,400
2	5.6487		.00295		15,700
3	9.6472	.00485		15,100	
4	10.24725	.0012		8,500	

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5″.50. Exterior diameter, 9″.80.

Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.86635				
2	5.64685		.0048		25,500
3	9.6462	.00385		12,000	
1 detached	10.2460				

RINGS ALL DETACHED.

2 detached	5.65165				
3 detached	9.64235				

Breech Slice.

Interior diameter, 4″.72. Exterior diameter, 10″.42.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.8601	4.8621	4.8611
2	5.6531	5.6413	5.6487
3	9.6439	9.6505	9.6472
4	10.2455	10.2490	10.24725

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.8662	4.8665	4.86635
2	5.6516	5.6421	5.64685
3	9.6432	9.6492	9.6462
4 detached	10.2385	10.2536	10.24605

RINGS ALL DETACHED.

2 detached	5.6551	5.6482	5.65165
3 detached	9.6393	9.6454	9.64235

Breech strains released.

Rings.	Diameter.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0061	+.0044	+.00525
2 in slice	−.0015	−.0022	−.00185
3 in slice	−.0007	−.0013	−.0010
4 detached	−.0070	+.0046	−.0012

SECOND TO THIRD PHASE.

2 detached	+.0035	+.0061	+0048
3 detached	−.0039	−.0038	—00385

FIRST TO THIRD PHASE.

2 detached	+.0020	+.0039	+.00295
3 detached	−.0046	−.0051	−.00485

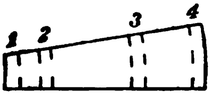
TUBE 11775 B_4.

MUZZLE SLICE.

State of internal strains and stresses at different phases of the slice.

SLICE INTACT.

Interior diameter of slice, 4″.25. Exterior diameter, 8″.60.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.3990	....	.00405	....	27,600
2	5.14955	....	.00215	....	12,500
2	7.14885	.00285	....	12,000	....
4	8.44905	.0032	....	11,400	....

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5″.00. Exterior diameter, 7″.30.

Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.40305				
2	5.1487		.0030		17,500
3	7.14845	.00245		10,300	
4 detached	8.44585				

RINGS ALL DETACHED.

2 detached	5.1517				
3 detached	7.1460				

Muzzle Slice.

Interior diameter, 4″.25. Exterior diameter, 8″.60.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.3998	4.3982	4.3990
2	5.1461	5.1530	5.14955
3	7.1496	7.1481	7.14885
4	8.4448	8.4533	8.44905

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.4040	4.4021	4.40305
2	5.1454	5.1520	5.1487
3	7.1491	7.1478	7.14845
4 detached	8.4433	8.4484	8.44585

RINGS ALL DETACHED.

2 detached	5.1481	5.1553	5.1517
3 detached	7.1472	7.1448	7.1460

Muzzle strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0042	+.0039	+.00405
2 in slice	−.0007	−.0010	−.00085
3 in slice	−.0005	−.0003	−.0004
4 detached	−.0015	−.0049	−.0032
SECOND TO THIRD PHASE.			
2 detached	+.0027	+.0033	+.0030
3 detached	−.0019	−.0030	−.00245
FIRST TO THIRD PHASE.			
2 detached	+.0020	+.0023	+.00215
3 detached	−.0024	−.0033	−.00285

TUBE 11784 B_2–B. S. 21.

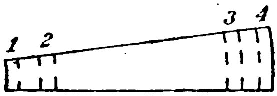
(With the usual discard of 1½″.)

BREECH SLICE.

State of internal strains and stresses at different phases of the slice.

SLICE INTACT.

Interior diameter of slice, 4″.78. Exterior diameter, 10″.45.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.92215		.0048		29,200
2	5.6450		.00345		18,300
3	9.64275	.0047		14,100	
4	10.2937	.00205		6,000	

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5″.50. Exterior diameter, 9″.80.

Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.92695				
2	5.6438		.00465		24,700
3	9.6419	.00385		12,000	
4 detached	10.29165				

RINGS ALL DETACHED.

2 detached	5.64845				
3 detached	9.63805				

Breech Slice.

Interior diameter, 4″.78. Exterior diameter, 10″.45.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.9230	4.9213	4.92215
2	5.6486	5.6414	5.6450
3	9.6480	9.6375	9.64275
4	10.2930	10.2944	10.2937

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.9285	4.9254	4.92695
2	5.6475	5.6401	5.6438
3	9.6471	9.6367	9.6419
4 detached	10.2971	10.2862	10.29165

RINGS ALL DETACHED.

2 detached	5.6519	5.6450	5.64845
3 detached	9.6442	9.6319	9.63805

Breech strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0055	+.0041	+.0048
2 in slice	−.0011	−.0013	−.0012
3 in slice	−.0009	−.0008	−.00085
4 detached	+.0041	−.0082	−.00205

SECOND TO THIRD PHASE.

2 detached	+.0044	+.0049	+.00465
3 detached	−.0029	−.0048	−.00385

FIRST TO THIRD PHASE.

2 detached	+.0083	+.0086	+.00845
3 detached	−.0038	−.0056	−.0047

Tube 11784 B_2–M S 21.

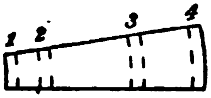
With the usual discard of 1½″.

MUZZLE SLICE.

State of internal strains and stresses at different phases of the slice.

SLICE INTACT.

Interior diameter of slice, 4″.26. Exterior diameter, 8″.57.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.3916		.00425		29,000
2	5.15255		.0022		12,800
3	7.15305	.0024		10,100	
4	8.41695	.0026		9,300	

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5″.00. Exterior diameter, 7″.30.

Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.39585				
2	5.1520		.00275		16,000
3	7.1528	.00215		9,000	
4 detached	8.41485				

RINGS ALL DETACHED.

2 detached	5.15475				
3 detached	7.15065				

MUZZLE SLICE.

Interior diameter, 4″.26. Exterior diameter, 8″.57.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.3916	4.3916	4.3916
2	5.1514	5.1587	5.15255
3	7.1542	7.1519	7.15305
4	8.4151	8.4188	8.41695

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.3963	4.3954	4.39585
2	5.1507	5.1533	5.1520
3	7.1535	7.1521	7.1528
4 detached	8.4175	8.4112	8.41485

RINGS ALL DETACHED.

2 detached	5.1527	5.1568	5.15475
3 detached	7.1508	7.1506	7.15065

Muzzle strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0047	+.0038	+.00425
2 in slice	−.0007	−.0004	−.00055
3 in slice	−.0007	+.0002	−.00025
4 detached	+.0024	−.0076	−.0026

SECOND TO THIRD PHASE.

2 detached	+.0020	+.0035	+.00275
3 detached	−.0027	−.0016	−.00215

FIRST TO THIRD PHASE.

2 detached	+.0013	+.0031	+.0022
3 detached	−.0034	−.0014	−.0024

TUBE 11784 B_2–B S 10.

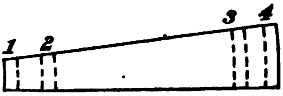
(Discard ⅜″.)

BREECH SLICE.

State of internal strains and stresses at different phases of the slice.

SLICE INTACT.

Interior diameter of slice, 4″.78. Exterior diameter, 10″.44.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.92355	....	.00525	....	32,000
2	5.65195	....	.00355	....	18,800
3	9.6552	.00505	....	15,700	....
4	10.2753	.00435	....	12,700	....

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5″.50. Exterior diameter, 9″.80.

Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.9288				
2	5.6510		.0045		23,900
3	9.6546	.00445		13,800	
4 detached	10.27095				

RINGS ALL DETACHED.

2 detached	5.6555				
3 detached	9.65015				

BREECH SLICE.

Interior diameter, 4″.78. Exterior diameter, 10″.44.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.9246	4.9225	4.92355
2	5.6521	5.6518	5.65195
3	9.6581	9.6523	9.6552
4	10.2759	10.2747	10.2753

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.9292	4.9284	4.9288
2	5.6514	5.6506	5.6510
3	9.6577	9.6515	9.6546
4 detached	10.2620	10.2799	10.27095

RINGS ALL DETACHED.

2 detached	5.6557	5.6553	5.6555
3 detached	9.6536	9.6467	9.65015

Breech strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0046	+.0059	+.00525
2 in slice	−.0007	−.0012	−.00095
3 in slice	−.0004	−.0008	−.0006
4 detached	−.0139	+.0052	−.00435

SECOND AND THIRD PHASE.

2 detached	+.0043	+.0047	+.0045
3 detached	−.0041	−.0048	−.00445

FIRST AND THIRD PHASE.

2 detached	+.0036	+.0035	+.00355
3 detached	−.0045	−.0056	−.00505

Tube 11784 B_2–M S 10.

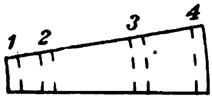
(Discard ⅜″.)

Muzzle Slice.

State of internal strains and stresses at different phases of the slice.

SLICE INTACT.

Interior diameter of slice, 4″.23. Exterior diameter, 8″.56.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.3671	....	.0034	....	23,400
2	5.1566	....	.00145	....	8,400
3	7.1467	.00215	....	9,000	....
4	8.4086	.0023	....	8,200	....

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5″.00. Exterior diameter, 7″.30.

Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.3705				
2	5.15605		.0020		11,600
3	7.14645	.0019		8,000	
4 detached	8.4063				

RINGS ALL DETACHED.

2 detached	7.15805				
3 detached	7.14455				

MUZZLE SLICE.

Interior diameter, 4″.23. Exterior diameter, 8″.56.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.3699	4.3643	4.3671
2	5.1577	5.1555	5.1566
3	7.1427	7.1507	7.1467
4	8.4079	8.4093	8.4086

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.3736	4.3674	4.3705
2	5.1574	5.1547	5.15605
3	7.1428	7.1501	7.14645
4 detached	8.4085	8.4091	8.4063

RINGS ALL DETACHED.

2 detached	5.1603	5.1558	5.15805
3 detached	7.1415	7.1476	7.14455

Muzzle strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0037	+.0031	+.0034
2 in slice	−.0003	−.0008	−.00055
3 in slice	+.0001	−.0006	−.00025
4 detached	−.0044	−.0002	−.0023

SECOND TO THIRD PHASE.

2 detached	+.0029	+.0011	+.0020
3 detached	−.0013	−.0025	−.0019

FIRST TO THIRD PHASE.

2 detached	+.0026	+.0003	+.00145
3 detached	−.0012	−.0031	−.00215

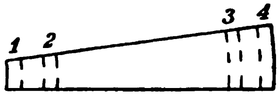
TUBE 11784 B_3.

BREECH SLICE.

State of internal strains and stresses at different phases of the slice.

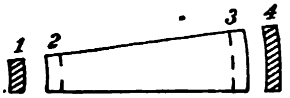
SLICE INTACT.

Interior diameter of slice, 4″.76.. Exterior diameter, 10″.43.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.92495		.0050		30,400
2	5.65445		.0027		14,300
3	9.6414	.00275		8,600	
4	10.2712		.0015		4,400

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5".50. Exterior diameter, 9".80.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.92995				
2	5.65315		.0040		21,200
3	9.6406	.00195		6,000	
4 detached	10.2727				

RINGS ALL DETACHED.

2 detached	5.65715				
3 detached	9.63865				

BREECH SLICE.

Interior diameter, 4".76. Exterior diameter; 10".43.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.9265	4.9231	4.92495
2	5.6585	5.6504	5.65445
3	9.6438	9.6390	9.6414
4	10.2736	10.2688	10.2712

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.9301	4.9298	4.92995
2	5.6569	5.6494	5.65315
3	9.6427	9.6385	9.6406
4 detached	10.2911	10.2543	10.2727

RINGS ALL DETACHED.

2 detached	5.6610	5.6533	5.65715
3 detached	9.6399	9.6374	9.63865

Breech strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0036	+.0064	+.0050
2 in slice	−.0016	−.0010	−.0013
3 in slice	−.0011	−.0005	−.0008
4 detached	+.0175	−.0145	+.0015

SECOND TO THIRD PHASE.

2 detached	+.0041	+.0039	+.0040
3 detached	−.0028	−.0011	−.00195

FIRST TO THIRD PHASE.

2 detached	+.0025	+.0029	+.0027
3 detached	−.0039	−.0016	−.00275

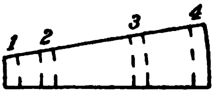
TUBE 11784 B_3.

MUZZLE SLICE.

State of internal strains and stresses at different phases of the slice.

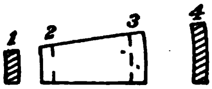
SLICE INTACT.

Interior diameter of slice, 4".28. Exterior diameter, 8".82.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.4359	....	.0044	....	29,800
2	5.1500	....	.0015	....	8,700
3	7.1520	.0018	....	7,500	....
4	8.66365	.00135	....	4,600	....

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5″.00. Exterior diameter, 7″.30.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.4403				
2	5.14895		.00255		14,800
3	7.15135	.00115		4,800	
4 detached	8.6623				

RINGS ALL DETACHED.

2 detached	5.1515				
3 detached	7.1502				

MUZZLE SLICE.

Interior diameter, 4″.28. Exterior diameter, 8″.82.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.4331	4.4387	4.4359
2	5.1534	5.1466	5.1500
3	7.1496	7.1544	7.1520
4	8.6638	8.6635	8.66365

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.4375	4.4431	4.4403
2	5.1522	5.1457	5.14895
3	7.1487	7.1540	7.15135
4 detached	8.6693	8.6553	8.6623

RINGS ALL DETACHED.

2 detached	5.1550	5.1480	5.1515
3 detached	7.1465	7.1539	7.1502

Muzzle strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0044	+.0044	+.0044
2 in slice	-.0012	-.0009	-.00105
3 in slice	-.0009	-.0004	-.00065
4 detached	+.0055	-.0082	-.00135

SECOND TO THIRD PHASE.

2 detached	+.0028	+.0023	+.00255
3 detached	-.0022	-.0001	-.00115

FIRST TO THIRD PHASE.

2 detached	+.0016	+.0014	+.0015
3 detached	-.0031	-.0005	-.0018

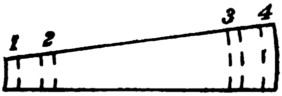
TUBE 11791 B_3

BREECH SLICE.

State of internal strains and stresses at different phases of the slice.

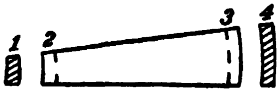
SLICE INTACT.

Interior diameter of slice, 4″.74. Exterior diameter, 10″.44.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.9008		.0053		32,400
2	5.65245		.0020		10,600
3	9.64965	.00285		8,900	
4	10.24905	.0005		1,500	

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5″.50. Exterior diameter, 9″.80.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.9061				
2	5.6512		.00325		17,200
3	9.64865	.00185		5,800	
4 detached	10.24855				

RINGS ALL DETACHED.

2 detached	5.65445				
3 detached	9.6468				

BREECH SLICE.

Interior diameter, 4″.74. Exterior diameter, 10″.44.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.9041	4.8975	4.9008
2	5.6535	5.6514	5.65245
3	9.6466	9.6527	9.64965
4	10.2507	10.2474	10.24905

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.9099	4.9023	4.9061
2	5.6524	5.6500	5.6512
3	9.6458	9.6515	9.64865
4 detached	10.2393	10.2578	10.24855

RINGS ALL DETACHED.

2 detached	5.6549	5.6540	5.65445
3 detached	9.6445	9.6491	9.6468

Breech strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0058	+.0048	+.0053
2 in slice	−.0011	−.0014	−.00125
3 in slice	−.0008	−.0012	−.0010
4 detached	−.0114	+.0104	−.0005

SECOND TO THIRD PHASE.

2 detached	+.0025	+.0040	+.00325
3 detached	−.0013	−.0024	−.00185

FIRST TO THIRD PHASE.

2 detached	+.0014	+.0026	+.0020
3 detached	.0021	−.0036	−.00285

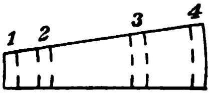
TUBE 11791 B_3.

MUZZLE SLICE.

State of internal strains and stresses at different phases of the slice.

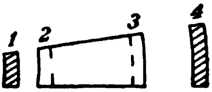
SLICE INTACT.

Interior diameter of slice, 4″.26. Exterior diameter, 8″.57.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.3959	....	.0041	....	28,000
2	5.14875	....	.00135	....	7,900
3	7.14445	.00225	....	9,400	....
4	8.4320	....	.00135	....	4,800

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5".00. Exterior diameter, 7".30.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.4000	....	....	....	....
2	5.1476	....	.0025	....	14,600
3	7.1436	.0014	....	5,900	....
4 detached	8.43335	....	....	....	....

RINGS ALL DETACHED.

2 detached	5.1501	....	....	....	....
3 detached	7.1422	....	....	....	....

MUZZLE SLICE.

Interior diameter, 4".26. Exterior diameter, 8".57.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.3975	4.3943	4.3959
2	5.1480	5.1496	5.14875
3	7.1469	7.1420	7.14445
4	8.4319	8.4321	8.4320

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.4022	4.3978	4.4000
2	5.1470	5.1482	5.1476
3	7.1462	7.1410	7.1436
4 detached	8.4247	8.4420	8.43335

RINGS ALL DETACHED.

2 detached	5.1490	5.1512	5.1501
3 detached	7.1445	7.1399	7.1422

Muzzle strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0047	+.0035	+.0041
2 in slice	−.0010	−.0013	−.00115
3 in slice	−.0007	−.0010	−.00085
4 detached	−.0072	+.0099	+.00135

SECOND TO THIRD PHASE.

2 detached	+.0020	+.0030	+.0025
3 detached	−.0017	−.0011	−.0014

FIRST TO THIRD PHASE.

2 detached	+.0010	+.0017	+.00135
3 detached	−.0024	−.0021	−.00225

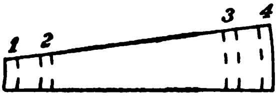
TUBE 11794 B_3.

BREECH SLICE.

State of internal strains and stresses at different phases of the slice.

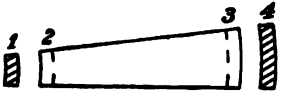
SLICE INTACT.

Interior diameter of slice, 4″.72. Exterior diameter, 10″.38.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.8816		.00625		38,400
2	5.64785		.00115		6,100
3	9.65575	.00205		6,400	
4	10.22165		.0001		300

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5″.50. Exterior diameter, 9″.80.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.88785				
2	5.64605		.00295		15,600
3	9.6547	.0010		3,100	
4 detached	10.22175				

RINGS ALL DETACHED.

2 detached	5.6490				
3 detached	9.6537				

BREECH SLICE.

Interior diameter, 4″.72. Exterior diameter, 10″.38.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.8869	4.8763	4.8816
2	5.6476	5.6481	5.64785
3	9.6607	9.6508	9.65575
4	10.2214	10.2219	10.22165

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.8930	4.8827	4.88785
2	5.6459	5.6462	5.64605
3	9.6598	9.6496	9.6547
4 detached	10.2361	10.2074	10.22175

RINGS ALL DETACHED.

2 detached	5.6482	5.6498	5.6490
3 detached	9.6574	9.6500	9.6537

Breech strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0061	+.0064	+.00625
2 in slice	−.0017	−.0019	−.0018
3 in slice	−.0009	−.0012	−.00105
4 detached	+.0147	−.0145	+.0001

SECOND TO THIRD PHASE.

2 detached	+.0023	+.0036	+.00295
3 detached	−.0024	+.0004	−.0010

FIRST TO THIRD PHASE.

2 detached	+.0006	+.0017	+.00115
3 detached	−.0033	−.0008	−.00205

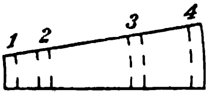
TUBE 11794 B_3.

MUZZLE SLICE.

State of internal strains and stresses at different phases of the slice.

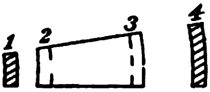
SLICE INTACT.

Interior diameter of slice, 4″.18. Exterior diameter, 8″.56.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.33495		.0046		31,800
2	5.14435		.0014		8,200
3	7.14245	.0027		11,300	
4	8.39525	.0033		11,800	

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5″.00 Exterior diameter, 7″.30.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.33955	....	....	....	....
2	5.14345	....	.0023	....	13,400
3	7.1417	.00195	....	8,200	....
4 detached	8.39195	....	....	....	....

RINGS ALL DETACHED.

2 detached	5.14575	....	....	....	....
3 detached	7.13975	....	....	....	....

MUZZLE SLICE.

Interior diameter, 4″.18. Exterior diameter, 8″.56.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.3405	4.3294	4.33495
2	5.1421	5.1466	5.14435
3	7.1421	7.1428	7.14245
4	8.3959	8.3946	8.39525

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.3448	4.3343	4.33955
2	5.1412	5.1457	5.14345
3	7.1413	7.1421	7.1417
4 detached	8.3939	8.3900	8.39195

RINGS ALL DETACHED.

2 detached	5.1441	5.1474	5.14575
3 detached	7.1392	7.1403	7.13975

Muzzle strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0043	+.0049	+.0046
2 in slice	−.0009	−.0009	−.0009
3 in slice	−.0008	−.0007	−.00075
4 detached	−.0020	−.0046	−.0033

SECOND TO THIRD PHASE.

2 detached	+.0029	+.0017	+.0023
3 detached	−.0021	−.0018	−.00195

FIRST TO THIRD PHASE.

2 detached	+.0020	+.0008	+.0014
3 detached	−.0029	−.0025	−.0027

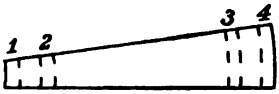
TUBE 11837 B_2.

BREECH SLICE.

State of internal strains and stresses at different phases of the slice.

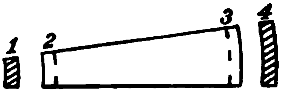
SLICE INTACT.

Interior diameter of slice, 4″.73. Exterior diameter, 10.″46.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.8794	....	.0048	....	29,500
2	5.66045	....	.0028	....	14,800
3	9.64025	.0031	....	9,600	....
4	10.26695	.0014	....	4,100	....

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5″.50. Exterior diameter, 9″.80.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.8842				
2	5.65915		.0041		21,700
3	9.6395	.00235		7,300	
4 detached	10.26555				

RINGS ALL DETACHED.

2 detached	5.66325				
3 detached	9.63715				

Breech Slice.

Interior diameter, 4″.73. Exterior diameter, 10″.46.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.8790	4.8798	4.8794
2	5.6561	5.6648	5.66045
3	9.6428	9.6377	9.64025
4	10.2644	10.2695	10.26695

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.8837	4.8847	4.8842
2	5.6547	5.6636	5.65915
3	9.6420	9.6370	9.6395
4 detached	10.2750	10.2561	10.26555

RINGS ALL DETACHED.

2 detached	5.6591	5.6674	5.66325
3 detached	9.6879	9.6364	9.63715

Breech strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0047	+.0049	+.0048
2 in slice	−.0014	−.0012	−.0013
3 in slice	−.0008	−.0007	−.00075
4 detached	+.0106	−.0134	−.0014

SECOND TO THIRD PHASE.

2 detached	+.0044	+.0038	+.0041
3 detached	−.0041	−.0006	−.00235

FIRST TO THIRD PHASE.

2 detached	+.0090	+.0026	+.0028
3 detached	−.0049	−.0018	−.0031

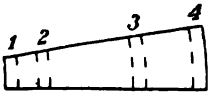
TUBE 11837 B_2.

MUZZLE SLICE.

State of internal strains and stresses at different phases of the slice.

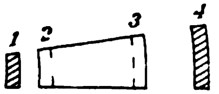
SLICE INTACT.

Interior diameter of slice, 4″.25. Exterior diameter, 8″.53.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.40715	....	.0037	....	25,200
2	5.1522	....	.0031	....	18,000
3	7.14975	.0027	....	11,300	....
4	8.3596	.0015	....	5,400	....

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5".00. Exterior diameter, 7".30.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.41085				
2	5.1514		.0039		22,700
3	7.14925	.0022		9,200	
4 detached	8.3581				

RINGS ALL DETACHED.

2 detached	5.1553				
3 detached	7.14705				

MUZZLE SLICE.

Interior diameter, 4".25. Exterior diameter, 8".53.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.4073	4.4070	4.40715
2	5.1479	5.1565	5.1522
3	7.1493	7.1502	7.14975
4	8.3569	8.3623	8.3596

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.4105	4.4112	4.41085
2	5.1467	5.1561	5.1514
3	7.1485	7.1500	7.14925
4 detached	8.3589	8.3573	8.3581

RINGS ALL DETACHED.

2 detached	5.1509	5.1597	5.1553
3 detached	7.1460	7.1481	7.14705

Muzzle strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0032	+.0042	+.0037
2 in slice	−.0012	−.0004	−.0008
3 in slice	−.0008	−.0002	−.0005
4 detached	+.0020	−.0050	−.0015

SECOND TO THIRD PHASE.

2 detached	+.0042	+.0036	+.0039
3 detached	−.0025	−.0019	−.0022

FIRST TO THIRD PHASE.

2 detached	+.0030	+.0032	+.0031
3 detached	−.0033	−.0021	−.0027

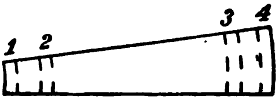
TUBE 11837 B_2.

BREECH SLICE.

State of internal strains and stresses at different phases of the slice.

SLICE INTACT.

Interior diameter of slice, 4″.74. Exterior diameter, 10″.46.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.87065	....	.00515	....	31,700
2	5.65925	....	.00265	....	14,000
3	9.64725	.00505	....	15,700	....
4	10.25755	.0044	....	12,900	....

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5″.50. Exterior diameter, 9″.80.

Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.8758				
2	5.6578		.0041		21,700
3	9.64645	.00425		13,200	
4 detached	10.25315				

RINGS ALL DETACHED.

2 detached	5.6619				
3 detached	9.6422				

Breech Slice.

Interior diameter, 4″.74. Exterior diameter, 10″.46.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.8731	4.8682	4.87065
2	5.6610	5.6575	5.65925
3	9.6494	9.6451	9.64725
4	10.2601	10.2550	10.25755

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.8782	4.8734	4.8758
2	5.6595	5.6561	5.6578
3	9.6484	9.6445	9.64645
4 detached	10.2668	10.2395	10.25315

RINGS ALL DETACHED.

2 detached	5.6647	5.6591	5.6619
3 detached	9.6453	9.6391	9.6422

Breech strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0051	+.0052	+.00515
2 in slice	−.0015	−.0014	−.00145
3 in slice	−.0010	−.0006	−.0008
4 detached	+.0067	−.0155	−.0044

SECOND TO THIRD PHASE.

2 detached	+.0052	+.0030	+.0041
3 detached	−.0031	−.0054	−.00425

FIRST TO THIRD PHASE.

2 detached	+.0037	+.0016	+.00265
3 detached	−.0041	-.0060	−.00505

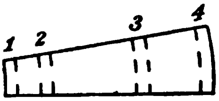
TUBE 11837 B$_2$.

MUZZLE SLICE.

State of internal strains and stresses at different phases of the slice.

SLICE INTACT.

Interior diameter of slice, 4″.25. Exterior diameter, 8″.50.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.3915		.00425		29,000
2	5.15065		.0009		5,200
3	7.15125	.00285		11,900	
4	8.3620	.00015		500	

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5''.00. Exterior diameter, 7''.30.

Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.39575				
2	5.14935		.0032		12,800
3	7.1503	.0019		8,000	
4 detached	8.36185				

RINGS ALL DETACHED.

2 detached	5.15155				
3 detached	7.1484				

MUZZLE SLICE.

Interior diameter, 4''.25. Exterior diameter, 8''.50.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.3955	4.3875	4.3915
2	5.1513	5.1500	5.15065
3	7.1500	7.1525	7.15125
4	8.3605	8.3635	8.3620

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.4001	4.3914	4.39575
2	5.1503	5.1484	5.14935
3	7.1495	7.1511	7.1503
4 detached	8.3616	8.3621	8.36185

RINGS ALL DETACHED.

2 detached	5.1525	5.1506	5.15155
3 detached	7.1470	7.1498	7.1484

Muzzle strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0046	+.0039	+.00425
2 in slice	−.0010	−.0016	−.0013
3 in slice	−.0005	−.0014	−.00095
4 detached	+.0011	−.0014	−.00015

SECOND TO THIRD PHASE.

2 detached	+.0022	+.0022	+.0022
3 detached	−.0025	−.0013	−.0019

FIRST TO THIRD PHASE.

2 detached	+.0012	+.0006	+.0009
3 detached	−.0030	−.0027	−.00285

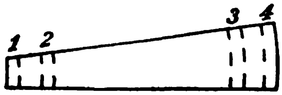
TUBE 12485 B_7.

BREECH SLICE.

State of internal strains and stresses at different phases of the slice.

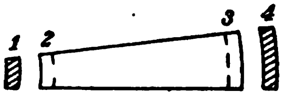
SLICE INTACT.

Interior diameter of slice, 4″.77. Exterior diameter, 10″.43.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Inches.*	*Inches.*
1	4.92325	....	.0050	....	30,500
2	5.6520	....	.0037	....	19,600
3	9.6447	.00365	....	11,400	....
4	10.2642	.00215	....	6,300	....

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5″.50. Exterior diameter, 9″.80.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.92825				
2	5.6508		.0049		26,000
3	9.6438	.00275		8,600	
4 detached	10.26205				

RINGS ALL DETACHED.

2 detached	5.6557				
3 detached	9.64105				

Breech Slice.

Interior diameter, 4″.77. Exterior diameter, 10″.43.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.9277	4.9188	4.92325
2	5.6549	5.6491	5.6520
3	9.6446	9.6448	9.6447
4	10.2614	10.2670	10.2642

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.9324	4.9241	4.92825
2	5.6539	5.6477	5.6508
3	9.6438	9.6438	9.6438
4 detached	10.2465	10.2776	10.26205

RINGS ALL DETACHED.

2 detached	5.6590	5.6524	5.6557
3 detached	9.6408	9.6413	9.64105

Breech strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0047	+.0053	+.0050
2 in slice	–.0010	–.0014	–.0012
3 in slice	–.0008	–.0010	–.0009
4 detached	–.0149	+.0106	–.00215
SECOND TO THIRD PHASE.			
2 detached	+.0051	+.0047	+.0049
3 detached	–.0030	–.0025	–.00275
FIRST TO THIRD PHASE.			
2 detached	+.0041	+.0033	+.0037
3 detached	–.0038	–.0035	–.00365

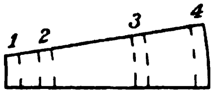
TUBE 12485 B_7.

MUZZLE SLICE.

State of internal strains and stresses at different phases of the slice.

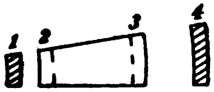
SLICE INTACT.

Interior diameter of slice, 4″.26. Exterior diameter, 8″.56.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.40965		.0044		29,900
2	5.1496		.00175		10,200
3	7.14775	.00225		9,400	
4	8.40355	.0014		5,000	

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5″.00. Exterior diameter, 7″.30.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.41405				
2	5.14845		.0029		16,900
3	7.14705	.00155		6,500	
4 detached	8.40215				

RINGS ALL DETACHED.

2 detached	5.15135				
3 detached	7.1455				

Muzzle Slice.

Interior diameter, 4″.26. Exterior diameter, 8″.56.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.4057	4.4136	4.40965
2	5.1468	5.1524	5.1496
3	7.1479	7.1476	7.14775
4	8.4009	8.4062	8.40355

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.4102	4.4179	4.41405
2	5.1456	5.1513	5.14845
3	7.1472	7.1469	7.14705
4 detached	8.3999	8.4044	8.40215

RINGS ALL DETACHED.

2 detached	5.1485	5.1542	5.15135
3 detached	7.1460	7.1450	7.1455

Muzzle strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0045	+.0043	+.0044
2 in slice	−.0012	−.0011	−.00115
3 in slice	−.0007	−.0007	−.0007
4 detached	−.0010	−.0018	−.0014

SECOND TO THIRD PHASE.

2 detached	+.0029	+.0029	+.0029
3 detached	−.0012	−.0019	−.00155

FIRST TO THIRD PHASE.

2 detached	+.0017	+.0018	+.00175
3 detached	−.0019	−.0026	−.00225

TUBE 12485 B_7.

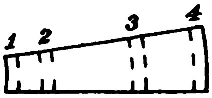
(Muzzle crop end of tube after annealing at 360° F.)

MUZZLE SLICE.

State of internal strains and stresses at different phases of the slice.

SLICE INTACT.

Interior diameter of slice, 4".27. Exterior diameter, 8".55.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.42055	....	.0039	....	26,500
2	5.15085	....	.0019	....	11,100
3	7.14635	.0018	....	7,600	....
4	8.40795	.0008	....	2,900	....

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice 5''.00. Exterior diameter, 7''.30.

Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.42445				
2	5.1504		.00235		13,700
3	7.14625	.0017		7,100	
4 detached	8.40715				

RINGS ALL DETACHED.

2 detached	5.15275				
3 detached	7.14455				

MUZZLE SLICE.

Interior diameter, 4''.27. Exterior diameter, 8''.55.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.4209	4.4202	4.42055
2	5.1472	5.1545	5.15085
3	7.1450	7.1477	7.14635
4	8.4065	8.4094	8.40795

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.4249	4.4240	4.42445
2	5.1468	5.1540	5.1504
3	7.1448	7.1477	7.14625
4 detached	8.4000	8.4143	8.40715

RINGS ALL DETACHED.

2 detached	5.1496	5.1559	5.15275
3 detached	7.1431	7.1460	7.14455

Muzzle strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0040	+.0038	+.0039
2 in slice	−.0004	−.0006	−.00045
3 in slice	−.0002	.0000	−.0001
4 detached	−.0065	+.0049	−.0008

SECOND TO THIRD PHASE.

2 detached	+.0028	+.0019	+.00235
3 detached	−.0017	−.0017	−.0017

FIRST TO THIRD PHASE.

2 detached	+.0024	+.0014	+.0019
3 detached	−.0019	−.0017	−.0018

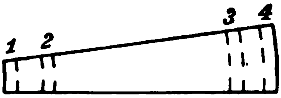
TUBE 15021 B_6.

BREECH SLICE.

State of internal strains and stresses at different phases of the slice.

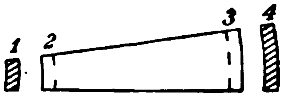
SLICE INTACT.

Interior diameter of slice, 4″.77. Exterior diameter, 10″.48.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.91815	....	.0058	....	32,300
2	5.66145	....	.00085	....	4,500
3	9.65095	.0018	....	5,600	....
4	10.3262	.0020	....	5,800	....

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5″.50. Exterior diameter, 9″.80.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.92345				
2	5.66085		.00195		10,300
3	9.65045	.0013		4,000	
4 detached	10.3242				

RINGS ALL DETACHED.

2 detached	5.6623				
3 detached	9.64915				

BREECH SLICE.

Interior diameter, 4″.77. Exterior diameter, 10″.48.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.9166	4.9197	4.91815
2	5.6658	5.6576	5.66145
3	9.6547	9.6472	9.65095
4	10.3269	10.3255	10.3262

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.9229	4.9240	4.92345
2	5.6642	5.6565	5.66035
3	9.6543	9.6466	9.65045
4 detached	10.3340	10.3144	10.3242

RINGS ALL DETACHED.

2 detached	5.6652	5.6594	5.6623
3 detached	9.6582	9.6451	9.64915

Breech strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0063	+.0043	+.0053
2 in slice	−.0011	−.0011	−.0011
3 in slice	−.0004	−.0006	−.0005
4 detached	+.0071	−.0111	−.0020

SECOND TO THIRD PHASE.

2 detached	+.0010	+.0029	+.00195
3 detached	−.0011	−.0015	−.0013

FIRST TO THIRD PHASE.

2 detached	−.0001	+.0018	+.00085
3 detached	−.0015	−.0021	−.0018

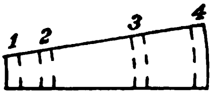
TUBE 15021 B$_6$.

MUZZLE SLICE.

State of internal strains and stresses at different phases of the slice.

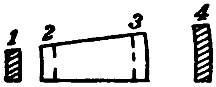
SLICE INTACT.

Interior diameter of slice, 4″.28. Exterior diameter. 8″.65.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.44445		.0045		30,400
2	5.1534		.0010		5,800
3	7.15475	.0018		7,500	
4	8.46795		.0008		2,800

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5''.00 Exterior diameter, 7''.30.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.44895				
2	5.1523		.0021		12,200
3	7.15395	.0010		4,100	
4 detached	8.46875				

RINGS ALL DETACHED.

2 detached	5.1544				
3 detached	7.15295				

Muzzle Slice.

Interior diameter, 4''.28. Exterior diameter, 8''.65.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.4426	4.4463	4.44445
2	5.1548	5.1520	5.1534
3	7.1542	7.1558	7.15475
4	8.4670	8.4689	8.46795

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.4470	4.4509	4.44895
2	5.1540	5.1506	5.1523
3	7.1585	7.1544	7.15395
4 detached	8.4534	8.4841	8.46875

RINGS ALL DETACHED.

2 detached	5.1563	5.1525	5.1544
3 detached	7.1524	7.1535	7.15295

Muzzle strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0044	+.0046	+.0045
2 in slice	−.0008	−.0014	−.0011
3 in slice	−.0007	−.0009	−.0008
4 detached	−.0136	+.0152	+.0008

SECOND TO THIRD PHASE.

2 detached	+.0023	+.0019	+.0021
3 detached	−.0011	−.0009	−.0010

FIRST TO THIRD PHASE.

2 detached	+.0015	+.0005	+.0010
3 detached	−.0013	−.0013	−.0013

TUBE 15021 B_6.

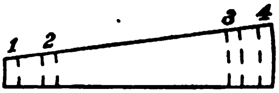
(Second treatment.)

BREECH SLICE.

State of internal strains and stresses at different phases of the slice.

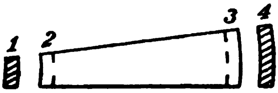
SLICE INTACT.

Interior diameter of slice, 4″.77. Exterior diameter, 10″.48.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.93255	....	.00605	....	36,800
2	5.6610	....	.00245	....	13,000
3	9.65555	.0036	....	11,200	....
4	10.30245	.00365	....	10,600	....

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5″.50. Exterior diameter, 9″.80.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.9386				
2	5.65965		.0038		20,100
3	9.65465	.0027		8,400	
4 detached	10.2988				

RINGS ALL DETACHED.

2 detached	5.66345				
3 detached	9.65195				

BREECH SLICE.

Interior diameter, 4″.77. Exterior diameter, 10″.48.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.9360	4.9291	4.93255
2	5.6625	5.6595	5.6610
3	9.6561	9.6550	9.65555
3	10.3070	10.2979	10.30245

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.9418	4.9354	4.9386
2	5.6612	5.6581	5.65965
3	9.6552	9.6541	9.65465
4 detached	10.3000	10.2976	10.2988

RINGS ALL DETACHED.

2 detached	5.6655	5.6614	5.66345
3 detached	9.6525	9.6514	9.65195

Breech strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0058	+.0063	+.00605
2 in slice	−.0013	−.0014	−.00135
3 in slice	−.0009	−.0009	−.0009
4 detached	−.0070	−.0003	−.00365

SECOND TO THIRD PHASE.

2 detached	+.0043	+.0033	+.0038
3 detached	−.0027	−.0027	−.0027

FIRST TO THIRD PHASE.

2 detached	+.0030	+.0019	+.00245
3 detached	−.0036	−.0036	−.0036

TUBE 15021 B_8.

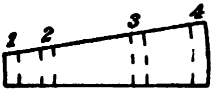
(Second treatment.)

MUZZLE SLICE.

State of internal strains and stresses at different phases of the slice.

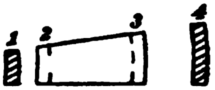
SLICE INTACT.

Interior diameter of slice 4″.28. Exterior diameter 8″.65.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.4498	....	.0038	....	25,600
2	5.14775	....	.00145	....	8,400
3	7.1590	.0022	....	9,200	....
4	8.47265	.0007	....	2,500	....

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5″. Exterior diameter, 7″.30.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.4536				
2	5.1469		.0023		13,400
3	7.1584	.0016		6,700	
4 detached	8.47195				

RINGS ALL DETACHED.

2 detached	5.1492				
3 detached	7.1568				

MUZZLE SLICE.

Interior diameter, 4″.28. Exterior diameter, 8″.65.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.4516	4.4480	4.4498
2	5.1465	5.1490	5.14775
3	7.1590	7.1590	7.1590
4	8.4803	8.4650	8.47265

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.4539	4.4533	4.4536
2	5.1453	5.1485	5.1469
3	7.1580	7.1588	7.1584
4	8.4899	8.4540	8.47195

RINGS ALL DETACHED.

2 detached	5.1479	5.1505	5.1492
3 detached	7.1568	7.1568	7.1568

Muzzle strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0023	+.0053	+.0038
2 in slice	−.0012	−.0005	−.00085
3 in slice	−.0010	−.0002	−.0006
4 detached	+.0096	−.0110	−.0007

SECOND TO THIRD PHASE.

2 detached	+.0026	+.0020	+.0023
3 detached	−.0012	−.0020	−.0016

FIRST TO THIRD PHASE.

2 detached	+.0014	+.0015	+.00145
3 detached	−.0022	−.0022	−.0022

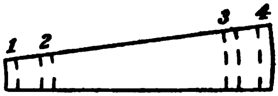
TUBE 15021 B_6.

BREECH SLICE.

State of internal strains and stresses at different phases of the slice.

SLICE INTACT.

Interior diameter of slice, 4″.76. Exterior diameter, 10″.42.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.93245		.00645		39,200
2	5.65005		.00305		16,200
3	9.6408	.0040		12,400	
4	10.25445	.0054		15,700	

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5″.50. Exterior diameter, 9″.80.

Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.9389				
2	5.64895		.00415		22,000
3	9.6400	.0032		10,000	
4 detached	10.24905				

RINGS ALL DETACHED.

2 detached	5.6531				
3 detached	9.6368				

Breech Slice.

Interior diameter, 4″.76. Exterior diameter, 10″.42.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.9324	4.9325	4.93245
2	5.6485	5.6516	5.65005
3	9.6392	9.6424	9.6408
4	10.2559	10.2530	10.25445

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.9390	4.9388	4.9389
2	5.6470	5.6509	5.64895
3	9.6383	9.6417	9.6400
4 detached	10.2626	10.2355	10.24905

RINGS ALL DETACHED.

2 detached	5.6507	5.6555	5.6531
3 detached	9.6368	9.6368	9.6368

Breech strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0066	+.0063	+.00645
2 in slice	−.0015	−.0007	−.0011
3 in slice	−.0009	−.0007	−.0008
4 detached	+.0067	−.0175	−.0054

SECOND TO THIRD PHASE.

2 detached	+.0087	+.0046	+.00415
3 detached	−.0015	−.0049	−.0032

FIRST TO THIRD PHASE.

2 detached	+.0022	+.0039	+.00305
3 detached	−.0024	−.0056	−.0040

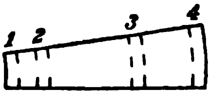
Tube 15021 B_6.

Muzzle Slice.

State of internal strains and stresses at different phases of the slice.

SLICE INTACT.

Interior diameter of slice, 4″.31. Exterior diameter, 8″.63.



Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1	4.44975		.00475		32,000
2	5.15425		.0028		16,800
3	7.15105	.00225		9,400	
4	8.4859	.0012		4,200	

Rings 1 and 4 detached; rings 2 and 3 in the slice.
Interior diameter of slice, 5″.00. Exterior diameter, 7″.30.

Rings.	Present mean diameters.	Strains.		Stresses per square inch.	
		Tension.	Compression.	Tension.	Compression.
	Inches.	*Inch.*	*Inch.*	*Pounds.*	*Pounds.*
1 detached	4.4545				
2	5.15875		.0033		19,200
3	7.15095	.00215		9,000	
4 detached	8.4847				

RINGS ALL DETACHED.

2 detached	5.15705				
3 detached	7.1488				

Muzzle Slice.

Interior diameter, 4″.31. Exterior diameter, 8″.63.
Original diameters of rings in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1	4.4471	4.4524	4.44975
2	5.1575	5.1510	5.15425
3	7.1501	7.1520	7.15105
4	8.4883	8.4835	8.4859

Rings 1 and 4 detached; rings 2 and 3 in the slice.

Rings.	Diameters.		
	A.	B.	Mean.
	Inches.	*Inches.*	*Inches.*
1 detached	4.4520	4.4570	4.4545
2	5.1565	5.1510	5.15375
3	7.1494	7.1525	7.15095
4 detached	8.4871	8.4823	8.4847

RINGS ALL DETACHED.

2 detached	5.1598	5.1543	5.15705
3 detached	7.1478	7.1498	7.1488

Muzzle strains released.

Rings.	Diameters.		
	A.	B.	Mean.
	Inch.	*Inch.*	*Inch.*
1 detached	+.0049	+.0046	+.00475
2 in slice	−.0010	.0000	−.0005
3 in slice	−.0007	+.0005	−.0001
4 detached	−.0012	−.0012	−.0012

SECOND TO THIRD PHASE.

2 detached	+.0028	+.0038	+.0033
3 detached	−.0016	−.0027	−.00215

FIRST TO THIRD PHASE.

2 detached	+.0018	+.0038	+.0028
3 detached	−.0023	−.0022	−.00225

BROKEN SUSPENSION ROD

FROM

8-INCH DISAPPEARING CARRIAGE AT FORT RODMAN.

STEEL FORGING.

No. 6842.

Diameter, ".564.
Sectional area, .25 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000133	.000133	0.	....	
10,000	.000333	.000200	....	....	
20,000	.000700	.000367	....	....	
30,000	.001033	.000333	....	....	
40,000	.001400	.000367	....	....	
45,000	.001600	.000200	....	....	
46,000	.001633	.000033	....	....	
47,000	.001700	.000067	....	....	
48,000	.001800	.000100	....	....	Elastic limit.
49,000	.002067	.000267	....	....	
50,000	.002433	.000366	....	....	
51,000	.002800	.000367	....	....	
52,000	.003333	.000533	....	....	
53,000	.003833	.000500	....	....	
54,000	.004467	.000634	....	....	
55,000	.004833	.000366	....	....	
56,000	.005667	.000834	....	....	
57,000	.006133	.000466	....	....	
58,000	.006667	.000534	....	....	
106,320	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	106,320
Elastic limit per square inch of original section	do...	48,000
Elongation per inch after rupture	inch..	.1700
Elongation per inch under strain at elastic limit	do...	.001800
Reduction in diameter at point of rupture	do...	.084
Reduction in area after rupture, per cent of original section		27.6
Position of rupture		1".59 from neck
Character of broken surface		granular, dull silky spot near the circumference
Elongation of inch sections		".14, ".25*, ".12

No. 6843.

Diameter, ".564.
Sectional area, .25 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.		0.	Initial load.
5,000	.000100	.000100	0.	....	
10,000	.000267	.000167	0.	....	
20,000	.000600	.000333	....	....	
30,000	.000933	.000333	....	....	
40,000	.001267	.000334	....	....	
45,000	.001433	.000166	....	....	
47,000	.001533	.000100	....	....	
48,000	.001667	.000134	....	....	Elastic limit.
49,000	.002000	.000333	....	....	
50,000	.002433	.000433	....	....	
51,000	.002667	.000234	....	....	
52,000	.003333	.000666	....	....	
53,000	.003800	.000467	....	....	
54,000	.004400	.000600	....	....	
55,000	.004733	.000333	....	....	
56,000	.005500	.000767	....	....	
106,400	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	106,400
Elastic limit per square inch of original section	do...	48,000
Elongation per inch after rupture	inch..	.1533
Elongation per inch under strain at elastic limit	do...	.001667
Reduction in diameter at point of rupture	do...	.084
Reduction in area after rupture, per cent of original section		27.6
Position of rupture		".85 from neck
Character of broken surface		granular, dull silky spot at the center
Elongation of inch sections		".10, ".15, ".21

No. 6844.

Diameter, ".564.
Sectional area, .25 square inch.
Gauged length, 3".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000133	.000133	0.	....	
10,000	.000300	.000167	....	....	
20,000	.000667	.000367	....	....	
30,000	.001033	.000366	....	....	
40,000	.001400	.000367	....	....	
43,000	.001500	.000100	....	....	
45,000	.001633	.000133	....	....	
46,000	.001667	.000034	....	....	
47,000	.001733	.000066	....	....	
48,000	.001800	.000067	....	....	Elastic limit.
49,000	.002100	.000300	....	....	
50,000	.002600	.000500	....	....	
51,000	.002867	.000267	....	....	
52,000	.003600	.000733	....	....	
53,000	.003933	.000333	....	....	
54,000	.004733	.000800	....	....	
55,000	.005100	.000367	....	....	
56,000	.005733	.000633	....	....	
57,000	.006167	.000434	....	....	
58,000	.007000	.000833	....	....	
106,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	106,000
Elastic limit per square inch of original section ....do...	48,000
Elongation per inch after rupture ....inch..	.1633
Elongation per inch under strain at elastic limit ....do...	.001800
Reduction in diameter at point of rupture ....do...	.084
Reduction in area after rupture, per cent of original section	27.6
Position of rupture	1" from neck
Character of broken surface	granular, dull silky spot near center
Elongation of inch sections	".12,".17,".20*

Three specimens, ½" × ½" cross-section dimensions, were cut off the rod at the fractured end.

These specimens were tested by bending cold. The samples bent through an angle of about 30° each, and then fractured with a granular appearance.

BURST 12-INCH TORPEDO SHELL.

SPECIMENS FROM FRAGMENTS.

STEEL CASTING.

No. 6490.

Longitudinal specimen.
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length, 3″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.000067	.000067	0.		
10,000	.000300	.000233			
15,000	.000433	.000333			
20,000	.000667	.000234			
25,000	.000833	.000166			
30,000	.001033	.000200			
31,000	.001100	.000067			
32,000	.001167	.000067			
33,000	.001200	.000033			
34,000	.001300	.000100			
35,000	.001333	.000033			
36,000	.001400	.000067			
37,000	.001467	.000067			
38,000	.001567	.000100			
39,000	.001633	.000066			Elastic limit.
40,000	.001800	.000167			
41,000	.001867	.000067			
42,000	.002033	.000166			
43,000	.002233	.000200			
44,000	.002367	.000134			
45,000	.002633	.000266			
46,000	.003100	.000467			
47,000	.003467	.000367			
48,000	.004067	.000600			
49,000	.004567	.000500			
50,000	.006000	.001433			
52,000	.007667	.001667			
54,000	.010733	.003066			
56,000	.014000	.003267			
58,000	.017400	.003400			
60,000	.021667	.004267			
60,640					Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	60,640
Elastic limit per square inch of original section	do	39,000
Elongation per inch after rupture	inch	.0267
Elongation per inch under strain at elastic limit	do	.001633
Reduction in diameter at point of rupture	do	.004
Reduction in area after rupture, per cent of original section		1.5
Position of rupture		1″.15 from neck
Character of broken surface		granular, dark spot at circumference
Elongation of inch sections		″.02, ″.03*, ″.03

No. 6491.

Tangential specimen.
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00035	.00020	....	....	
15,000	.00055	.00020	....	....	
20,000	.00075	.00020	....	....	
25,000	.00110	.00035	....	....	
28,000	.00150	.00040	....	....	
29,000	.00165	.00015	....	....	Elastic limit.
30,000	.00235	.00070	....	....	
31,000	.00300	.00065	....	....	
32,000	.00350	.00050	....	....	
33,000	.00440	.00090	....	....	
34,000	.00525	.00085	....	....	
35,000	.00640	.00115	....	....	
36,000	.00750	.00110	....	....	
38,000	.01000	.00250	....	....	
40,000	.01300	.00300	....	....	
42,000	.01640	.00340	....	....	
44,000	.02150	.00510	....	....	
45,240	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	45,240
Elastic limit per square inch of original section	do	29,000
Elongation per inch after rupture	inch	.0400
Elongation per inch under strain at elastic limit	do	.00165
Reduction in diameter at point of rupture	do	.014
Reduction in area after rupture, per cent of original section		5.0
Position of rupture		″.9 from neck
Character of broken surface		granular 60 per cent, dark spongy 40 per cent
Elongation of inch sections		″.08, ″.05*

No. 6492.

Longitudinal specimen.
Diameter, 1″.129.
Sectional area, 1.00 square inch.
Gauged length, 10″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00016	.00016	0.	....	
10,000	.00033	.00017	.00001	.00001	
15,000	.00054	.00021	.00002	.00001	
18,000	.00068	.00014	....	....	
19,000	.00071	.00003	....	....	Elastic limit.
20,000	.00078	.00007	.00008	.00006	
21,000	.00085	.00007	....	....	
22,000	.00091	.00006	....	....	
23,000	.00100	.00009	....	....	
24,000	.00108	.00008	....	....	
25,000	.00119	.00011	.00028	.00020	
26,000	.00132	.00013	....	....	
27,000	.00149	.00017	....	....	
28,000	.00170	.00021	....	....	
30,000	.00240	.00070	.00130	.00102	
32,000	.00380	.00140	....	....	
34,000	.00550	.00170	....	....	
36,000	.00740	.00190	....	....	
38,000	.01000	.00260	....	....	
38,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	38,500
Elastic limit per square inch of original section	do...	19,000
Elongation per inch after rupture	inch..	.012
Elongation per inch under strain at elastic limit	do...	.00071
Reduction in diameter at point of rupture	do...	.009
Reduction in area after rupture, per cent of original section		1.5
Position of rupture		1″.75 from neck
Character of broken surface		granular 60 per cent, dull spongy 40 per cent

No. 6497.

Longitudinal specimen.
Diameter, ".564.
Sectional area, .25 square inch.
Gauged length, 2".

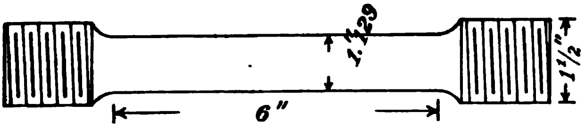
Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	0.	....	
15,000	.00050	.00015	0.	....	
20,000	.00060	.00010	0.	....	
25,000	.00080	.00020	.00005	.00005	
30,000	.00100	.00020	.00005	0.	
35,000	.00130	.00030	.00030	.00025	Elastic limit, approximate..
36,000	.00140	.00010	....	....	
37,000	.00150	.00010	....	....	
38,000	.00160	.00010	....	....	
39,000	.00175	.00015	....	....	
40,000	.00200	.00025	.00070	.00040	
41,000	.00220	.00020	....	....	
42,000	.00250	.00030	....	....	
43,000	.00280	.00030	....	....	
44,000	.00310	.00030	....	....	
45,000	.00350	.00040	....	....	
46,000	.00410	.00060	....	....	
47,000	.00475	.00065	....	....	
48,000	.00580	.00105	....	....	
49,000	.00635	.00055	....	....	
50,000	.00715	.00080	....	....	
52,000	.00895	.00180	....	....	
54,000	.01060	.00165	....	....	
56,000	.01315	.00255	....	....	
58,000	.01540	.00225	....	....	
60,000	.01785	.00245	....	....	
62,100	.02075	.00290	....	....	
64,000	.02405	.00330	....	....	
64,720	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section........pounds..	64,720
Elastic limit per square inch of original section (approximate)........do...	35,000
Elongation per inch after rupture........inch..	.0300
Elongation per inch under strain at elastic limit........do...	.00130
Reduction in diameter at point of rupture........do...	.004
Reduction in area after rupture, per cent of original section........	1.5
Position of rupture........	".6 from neck
Character of broken surface........	granular, spongy streak across surface
Elongation of inch sections........	".02, ".04*

STEEL SPECIMEN FROM FORGED ARMOR PLATE.

No. 9762.



Sectional area	square inch..	1.00
Elastic limit per square inch	pounds..	50,200
Tensile strength per square inch	do...	85,600
Elongation in 6 inches	per cent..	22.5
Contraction of area	do..	45.9
Appearance of fracture		silky, cup shaped
Elongation of inch sections		".11, ".15, ".18, ".46*, ".31, ".14

COLD ROLLED STEEL BAR.

No. 7208.

Bar ¾" diameter, turned down in the stem to ".564 diameter.
Sectional area, .25 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00065	.00035	....	....	
30,000	.00105	.00040	0.	....	
40,000	.00145	.00040	....	....	
50,000	.00160	.00015	....	....	
60,000	.00205	.00045	0.	....	
70,000	.00250	.00045	....	....	
71,000	.00255	.00005	....	....	Elastic limit.
72,000	.00275	.00020	....	....	
73,000	.00290	.00015	....	....	
74,000	.00305	.00015	.00040	.00040	
75,000	.00325	.00020	....	....	
76,000	.00355	.00030	....	....	
77,000	.00375	.00020	....	....	
78,000	.00465	.00090	....	....	
80,000	.00900	.00435	....	....	
84,000	.02900	.02000	....	....	
87,240	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	87,240
Elastic limit per square inch of original section	do...	71,000
Elongation per inch after rupture	inch..	.1900
Elongation per inch under strain at elastic limit	do...	.00255
Reduction in diameter at point of rupture	do...	.185
Reduction in area after rupture, per cent of original section		46.2
Position of rupture		1".14 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		".13, ".25*

ARMOR PLATE FOR TESTING SHELLS.

STEEL CASTINGS.

No. 6807.

Marks, $\overset{\text{C S}}{\text{A P 3}}$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00015	.00015	0.	....	
10,000	.00050	.00035	....	....	
20,000	.00090	.00040	....	....	
28,000	.00120	.00030	....	....	Elastic limit.
29,000	.00140	.00020	....	....	
30,000	.00195	.00055	....	....	
31,000	.00400	.00205	....	....	
32,000	.00505	.00105	....	....	
33,000	.00730	.00225	....	....	
81,500	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	81,500
Elastic limit per square inch of original section	do...	28,000
Elongation per inch after rupture	inch..	.1400
Elongation per inch under strain at elastic limit	do...	.00120
Reduction in diameter at point of rupture	do...	.035
Reduction in area after rupture, per cent of original section		13.2
Position of rupture		1.″ from neck
Character of broken surface		fine granular, silky, eccentric spot
Elongation of inch sections		″.16*, ″.12

No. 6643.

3″ TEST PLATE FOR 6-POUNDER SHELLS.

Marks, $\overset{A_1}{\mathrm{T}}\mathrm{P}\,3$
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00025	.00015	....	....	
20,000	.00055	.00030	....	....	
28,000	.00090	.00035	....	....	
29,000	.00095	.00005	....	....	Elastic limit.
30,000	.01250	.01155	....	....	
31,000	.01350	.00100	....	....	
32,000	.01450	.00100	....	....	
33,000	.01550	.00100	....	....	
63,050	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	63,050
Elastic limit per square inch of original section	do...	29,000
Elongation per inch after rupture	inch..	.2250
Elongation per inch under strain at elastic limit	do...	.00095
Reduction in diameter at point of rupture	do...	.065
Reduction in area after rupture, per cent of original section		23.9
Position of rupture		″.50 from neck
Character of broken surface		granular, silky spot at circumference
Elongation of inch sections		″.27*, ″.18

No. 6644.

3″ TEST PLATE FOR 6-POUNDER SHELLS.

Marks, $\frac{A}{21}$ P3
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00025	.00015	....	....	
20,000	.00060	.00035	....	....	
28,000	.00090	.00030	....	....	
29,000	.00095	.00005	....	....	Elastic limit.
30,000	.01225	.01130	....	....	
31,000	.01300	.00075	....	....	
32,000	.01425	.00125	....	....	
33,000	.01500	.00075	....	....	
34,000	.01700	.00200	....	....	
62,950	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	62,950
Elastic limit per square inch of original section ....do...	29,000
Elongation per inch after rupture ....inch..	.2700
Elongation per inch under strain at elastic limit ....do...	.00095
Reduction in diameter at point of rupture ....do...	.105
Reduction in area after rupture, per cent of original section	37.1
Position of rupture	″.70 from neck
Character of broken surface	silky
Elongation of inch sections	″.20, ″.34*

No. 6743.

3″ TEST PLATE FOR 6-POUNDER SHELLS.

Marks, $\overset{S}{\text{T}}$P 2
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00005	.00005	0.	....	
10,000	.00030	.00025	....	....	
20,000	.00060	.00030	....	....	
30,000	.00100	.00040	....	....	
38,000	.00130	.00030	....	....	Elastic limit.
39,000	.00150	.00020	....	....	
40,000	.00160	.00010	....	....	
41,000	.00200	.00040	....	....	
42,000	.00240	.00040	....	....	
43,000	.00270	.00030	....	....	
44,000	.00300	.00030	....	....	
45,000	.00345	.00045	....	....	
46,000	.00395	.00050	....	....	
104,000	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section......pounds..	104,000
Elastic limit per square inch of original section......do...	38,000
Elongation per inch after rupture......inch..	.0900
Elongation per inch under strain at elastic limit......do...	.00130
Reduction in diameter at point of rupture......do...	.025
Reduction in area after rupture, per cent of original section......	9.5
Position of rupture......	″.85 from neck
Character of broken surface......	granular
Elongation of inch sections......	″.08, ″.10

Cast Iron for Dynamite-Gun Barrels.

No. 6745.

Marks, $\begin{matrix} D\ G_2 \\ M\ I\ D_2 \\ T_2 \end{matrix}$
Diameter, 1″.129.
Sectional area, 1.00 square inch.
Gauged length, 6″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
2,000	.000067	.000067	....	....	
3,000	.000133	.000066	....	....	
4,000	.000217	.000084	....	....	
5,000	.000300	.000083	....	....	
6,000	.000383	.000083	....	....	
7,000	.000467	.000084	....	....	
8,000	.000550	.000083	....	....	
9,000	.000633	.000083	....	....	
10,000	.000733	.000100	.000083	.000083	
11,000	.000817	.000084	....	....	
12,000	.000900	.000083	....	....	
13,000	.001017	.000117	....	....	
14,000	.001133	.000116	....	....	
15,000	.001217	.000084	.000133	.00050	
16,000	.001333	.000116	....	....	
17,000	.001500	.000167	....	....	
18,000	.001633	.000133	....	....	
19,000	.001817	.000184	....	....	
20,000	.002033	.000216	.000433	.0003000	
21,000	.002233	.000200	....	....	
22,000	.002500	.000267	....	....	
23,000	.002800	.000300	....	....	
24,000	.003217	.000417	....	....	
25,000	.003750	.000533	.001433	.00100	
27,020	....	....	....	....	Tensile strength.

Fractured at the neck. Appearance, fine granular, light gray.

CAST IRON FROM WATERTOWN ARSENAL

AND

PIG IRONS.

The specimens of cast iron were taken from cylinders 18″ long by 8″ diameter, cored 3½″ diameter, poured from the same metal as the castings they represented.

Specimens of pig iron were turned down directly from sample pigs.

The furnace charges were as follows:

The scrap iron used was heads of shot and shell of previous casts, old shot and shell, bolsters and gun carriage scrap of good quality.

Date of cast.	Furnace charge.	Pounds.	Furnace.	No. of tension test.
May 18, 1900	Muirkirk pig	9,000	Air	6395
	Nittany pig	8,000		
	Round shot	4,000		
	Heads	2,500		
	Total	23,500		
May 22, 1900	Muirkirk pig	1,100	Cupola	6394
	Nittany pig	1,100		
	Round shot	9,800		
	Heads	500		
	Total	12,500		
May 29, 1900	Muirkirk pig	5,000	Cupola	6399
	Round shot	8,000		
	Heads	7,000		
	Total	20,000		
May 29, 1900	Muirkirk pig	20,000	Air	6397
	Nittany pig	6,000		
	Round shot	10,000		
	Heads	3,000		
	Scrap	1,000		
	Total	40,000		
June 1, 1900	Muirkirk pig	14,000	Air	6404
	Nittany pig	4,000		
	Round shot	7,000		
	Heads	5,000		
	Total	30,000		
June 1, 1900	Muirkirk pig	4,000	Cupola	6402
	Hard pig	200		
	Round shot	6,000		
	Heads	4,000		
	Total	14,200		
June 9, 1900	Muirkirk pig	3,200	Cupola	6405
	Round shot	2,000		
	Heads	1,600		
	Total	6,800		
June 11, 1900	Muirkirk pig	1,600	Cupola	6408
	Nittany pig	400		
	Round shot	1,000		
	Heads	2,000		
	Total	5,000		
June 11, 1900	Muirkirk pig	12,000	Air	6409
	Nittany pig	6,000		
	Round shot	3,000		
	Heads	2,000		
	Total	23,000		
June 16, 1900	Muirkirk pig	4,800	Cupola	6410
	Hard pig	12,000		
	Heads	6,000		
	Total	22,800		

Date of cast.	Furnace charge.		Furnace.	No. of tension test.
		Pounds.		
June 16, 1900	Nittany pig	5,000	Air	6414
	Round shot	11,000		
	Heads	6,000		
	Total	22,000		
June 21, 1900	Muirkirk pig	4,000	Cupola	6415
	Round shot	2,000		
	Heads	7,000		
	Scrap	1,000		
	Total	14,000		
June 23, 1900	Muirkirk pig	1,600	Cupola	6422
	Hard pig	400		
	Round shot	200		
	Heads	2,800		
	Total	5,000		
June 23, 1900	Muirkirk	18,000	Air	6417
	Nittany pig	8,000		
	Round shot	3,000		
	Heads	8,000		
	Scrap	3,000		
	Total	40,000		
June 26, 1900	Muirkirk pig	1,000	Cupola	6418
	Round shot	2,500		
	Heads	4,600		
	Total	8,100		
June 26, 1900	Muirkirk pig	14,000	Air	6419
	Nittany pig	7,000		
	Round shot	3,000		
	Heads	6,000		
	Total	30,000		

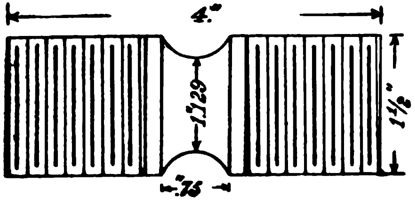
No. 6582.

Marks, 82.
Diameter, 1″.129.
Sectional area, 1.00 square inch.
Gauged length, 5″.
From the same metal as tenacity test No. 6013.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
2,000	.00008	.00008	0.	....	
3,000	.00014	.00006	....	....	
4,000	.00020	.00006	....	....	
5,000	.00028	.00008	....	....	
6,000	.00036	.00008	....	....	
7,000	.00044	.00008	....	....	
8,000	.00052	.00008	....	....	
9,000	.00060	.00008	....	....	
10,000	.00068	.00008	.00006	.00006	
11,000	.00076	.00008	....	....	
12,000	.00086	.00010	....	....	
13,000	.00096	.00010	....	....	
14,000	.00104	.00008	....	....	
15,000	.00114	.00010	.00014	.00008	
16,000	.00124	.00010	....	....	
17,000	.00136	.00012	....	....	
18,000	.00150	.00014	....	....	
19,000	.00164	.00014	....	....	
20,000	.00176	.00012	.00032	.00018	
21,000	.00194	.00018	....	....	
22,000	.00210	.00016	....	....	
23,000	.00226	.00016	....	....	
24,000	.00256	.00030	....	....	
25,000	.00278	.00022	.00078	.00046	
28,180	....	....	....	....	Tensile strength.

Fractured at the neck. Appearance, fine granular, light gray.

CHEMICAL ANALYSES AND TENSION TESTS.



No. of test.	Description.	Date of cast.	Chemical composition.								Tensile strength per square inch.	Fracture.	Specific gravity.
			Carbon.			Manganese.	Silicon.	Sulphur.	Phosphorus.	Copper.			
			Total.	Graphitic.	Combined.								
		1900.									*Pounds.*		
6012	3" shell										28,400	Granular, gray	7.1306
6361	8" shot										29,120	Fine granular, light gray, mottled	7.3658
6372	do										27,400	do	7.2070
6373	do										29,360	do	7.2917
6402	do	June 1									28,950	Fine granular, light gray	7.2310
6405	do	June 9									29,370	Granular, gray, mottled	7.4036
6415	do	June 21									27,600	Granular, light gray, mottled	7.2853
6422	do	June 23									31,600	Fine granular, light gray, mottled	7.2436
6387	10" shot										27,810	Granular, gray, mottled	7.3368
6394	do	May 22									28,050	Fine granular, light gray	7.2437
6399	do	May 29									30,600	do	
6402	do	June 1									28,950	do	7.2310
6405	do	June 9									29,370	Granular, gray, mottled	7.4036
6408	do	June 11									28,980	Granular, gray	7.2546
6410	do	June 16									28,850	do	7.1656
6414	do	do									29,390	Granular, light gray, mottled	7.2222
6415	do	June 21									27,600	do	7.2853
5994	12" shot and shell										32,900	Fine granular, dark gray	7.2433
5996	do										33,960	Fine granular, light gray	7.2812
5997	12" shot										35,400	do	7.2518
5998	12" shot and shell										34,150	do	7.2129
5999	do										33,400	do	7.2017

6009	.....do										33,600	Granular, gray	7.1967
6010	.....do										32,500	.....do	7.3094
6013	12″ shot										31,720	Granular, light gray	7.1833
6028	12″ shot and shell										27,410	.....do	7.1873
6034	.....do										32,300	.....do	7.1901
6041	12″ shot										32,300	Fine granular, light gray	7.1835
6043	12″ shot and shell										29,400	Granular, gray	7.1149
6049	.....do										28,020	Granular, dark gray	
6072	.....do										29,500	Fine granular, light gray	7.2132
6082	12″ shot										28,000	Granular, light gray	7.2687
6111	12″ shot and shell										31,020	Fine granular, light gray	7.1500
6129	.....do										31,400	.....do	7.2682
6140	.....do										32,300	Granular, light gray	7.2040
6150	.....do										29,500	.....do	7.2161
6151	.....do										31,700	.....do	7.2123
6152	.....do										30,680	.....do	7.2046
6200	.....do										32,020	.....do	7.1608
6201	.....do										31,600	.....do	7.1905
6202	12″ shot										30,420	Fine granular, light gray	7.2345
6222	12″ shot and shell										28,900	Granular, light gray	7.2291
6223	.....do										31,100	.....do	7.1751
6230	.....do										30,600	.....do	7.1225
6235	.....do										32,780	.....do	7.2286
[illegible]	.....do										32,380	.....do	7.2663
6234	.....do										31,600	.....do	7.2791
6241	.....do										30,980	.....do	7.2142
6246	.....do										26,950	.....do	7.2630
6247	.....do										32,100	.....do	7.2730
6273	12″ shot										28,600	.....do	7.1678
6289	12″ shot and shell										32,400	.....do	7.3595
6290	.....do										28,450	Granular, light gray, mottled	7.3333
6294	.....do										30,340	Granular, light gray	7.3224
6295	12″ shot										29,880	Granular, gray	7.2892
6313	.....do										31,600	Granular, light gray	7.2520
6314	12″ shot and shell										30,450	.....do	7.2806
6316	12″ shot										31,200	Fine granular, light gray	7.3590
6317	12″ shot and shell										31,600	.....do	7.2769
6325	.....do										27,400	Granular, gray	7.4003
6329	12″ shot										31,700	Fine granular, light gray	7.3231
6361	.....do										29,120	Fine granular, light gray, mottled	7.3653
6362	12″ shot and shell										27,790	.....do	7.4147
6371	12″ shot										30,100	Granular, light gray	7.2203
6372	12″ shot and shell										27,400	Granular, light gray, mottled	7.2070
6373	.....do										29,360	.....do	7.2917
6381	12″ shot										27,600	.....do	7.2443
6382	12″ shot and shell										29,980	Granular, light gray	7.2339
6383	.....do										29,920	.....do	7.2031
6385	.....do										31,300	.....do	7.2704
6386	.....do										26,980	Granular, gray, mottled	7.1960
6387	12″ shell										27,810	.....do	7.3368
6394	.....do	May 22									28,050	Fine granular, light gray	7.2437
6399	.....do	May 29									30,600	.....do	

CHEMICAL ANALYSES AND TENSION TESTS—Continued.

No. of test.	Description.	Date of cast.	Chemical composition.								Tensile strength per square inch.	Fracture.	Specific gravity.
			Carbon.			Manganese.	Silicon.	Sulphur.	Phosphorus.	Copper.			
			Total.	Graphitic.	Combined.								
		1900.									*Pounds.*		
6402	12" shell	June 1									28,950	Fine granular, light gray	7.2310
6405	do	June 9									29,370	Granular, gray, mottled	7.4036
6408	do	June 11									28,980	Granular, gray	7.2546
6410	do	June 16									28,860	do	7.1656
6414	do	do									29,380	Granular, light gray, mottled	7.2222
6415	do	June 21									27,600	do	7.2858
6418	do	June 26									30,520	Granular, gray, mottled	7.3421
6422	do	June 23									31,600	Fine granular, light gray, mottled	7.2436
5995	6" disappearing carriage										34,970	Fine granular, light gray	7.2392
5997	do										35,400	do	7.2518
5998	do										34,150	do	7.2129
5999	do										33,400	Granular, gray	7.2017
6009	do										33,600	do	7.1967
6010	do										32,500	do	7.3094
6129	do										31,400	Fine granular, light gray	7.2682
6200	8" disappearing carriage										32,020	Granular, light gray	7.1606
6228	do										31,100	do	7.1751
6230	do										30,600	do	7.1225
6241	do										30,960	do	7.2142
6247	do										32,100	Fine granular, light gray	7.2780
6290	do										28,450	Granular, light gray, mottled	7.3333
6294	do										30,840	Granular, light gray	7.3224
6318	do										31,600	do	7.2520
5995	8" barbette carriage										34,970	Fine granular, light gray	7.2392
6018	do										31,720	Granular, light gray	7.1883
6129	do										31,400	Fine granular, light gray	7.2682
6065	10" barbette carriage										31,600	Granular, light gray	7.1587
6046	12" barbette carriage										29,900	Granular, gray	7.1629
6228	12" disappearing carriage										31,100	Granular, light gray	7.1751
6231	do										32,380	do	7.2663
6241	do										30,960	do	7.2142
6289	do										32,400	do	7.3595
6295	do										29,880	Granular, gray	7.2392
6314	do										30,450	Granular, light gray	7.2806
6316	do										31,200	Fine granular, light gray	7.3590
6317	do										31,600	do	7.2769

6325	do										27,400	Granular, gray	7.4003
6329	do										31,700	Fine granular, light gray	7.3231
6395	do	May 18									30,650	do	7.3485
6371	do										30,100	Granular, light gray	7.2203
6383	do										29,920	do	7.2031
6409	do	June 11									32,100	Granular, gray	7.2997
6412	do	do									28,400	do	7.3269
6413	do	do									31,780	Granular, light gray	7.3515
6013	12" mortar carriage										31,720	do	7.1833
6028	do										27,410	do	7.1373
6034	do										32,300	do	7.1901
6035	do										31,600	do	7.1587
6041	do										32,300	do	7.1335
6043	do										29,400	Granular, gray	7.1149
6045	do										29,900	do	7.1629
6140	do										32,300	Granular, light gray	7.2040
6150	do										29,500	do	7.2161
6151	do										31,700	do	7.2128
6200	do										32,020	do	7.1608
6202	do										30,420	Fine granular, light gray	7.2345
6222	do										28,900	Granular, light gray	7.2291
6230	do										30,600	do	7.1225
6235	do										32,780	do	7.2286
6247	do										32,100	Fine granular, light gray	7.2730
6273	do										28,600	Granular, gray	7.1573
6290	do										28,450	Granular, light gray, mottled	7.1333
6294	do										30,340	Granular, light gray	7.3224
6313	do										31,600	do	7.2520
6361	do										29,120	Fine granular, light gray, mottled	7.3653
6362	do										27,790	do	7.4147
6371	do										30,100	Granular, light gray	7.2203
6382	do										29,980	do	7.2389
6385	do										31,300	do	7.2704
6386	do										26,980	Granular, gray, mottled	7.1960
6397	do	May 29									34,800	Granular, light gray	7.3285
6404	do	June 1									35,600	Fine granular, gray	7.3010
6417	do	June 23									31,200	Granular, light gray	7.3470
6419	do	June 26									29,300	Granular, gray	7.2355

CHEMICAL ANALYSES AND TENSION TESTS—Continued.

PIG IRONS.

No. of test.	Description.	Chemical composition.								Tensile strength per square inch.	Fracture.	Specific gravity.
		Carbon.			Manganese.	Silicon.	Sulphur.	Phosphorus.	Copper.			
		Total.	Graphitic.	Combined.								
										Pounds.		
5989	Nittany pig	3.446	2.754	0.692	0.312	4.000	0.030	0.260	....	12,190	Medium and coarse granular, cavity at center ¼″ diameter.	....
6042	Nittany pig No. 1	....	....	....	....	....	....	....	....	15,100	Coarse and fine granular, bright facets	6.8816
6130	.....do	....	....	....	....	....	....	....	....	14,100	Coarse and fine granular, spongy	....
6131	.....do	3.299	3.272	0.027	0.300	3.224	0.012	1.009	....	14,320	.....do	6.8741
6203	.....do	....	....	....	....	....	....	....	....	13,490	Granular with coarse spangles, gray	6.9312
6400	.....do	3.659	2.593	1.066	0.315	2.000	0.015	0.872	....	13,650	Coarse granular, brilliant facets	....
6232	Emporium pig No. 1	....	....	....	....	....	....	....	....	11,820	Granular, coarse spangles, dark gray	6.9709
6233	Salisbury pig No. 4	....	....	....	....	....	....	....	....	32,590	Fine granular, light gray	7.3320
6242	.....do	....	....	....	....	....	....	....	....	32,220	.....do	7.3479
6321	Pulaski pig No. 1	3.817	3.626	0.191	0.550	2.450	0.060	1.140	....	12,940	Coarse and fine granular, brilliant facets.	7.2338
6322	.....do	....	....	....	....	....	....	....	....	13,990	.....do	6.9393
6377	Muirkirk pig No. 4	....	....	....	....	....	....	....	....	28,960	Fine granular, gray	7.2566
6378	.....do	....	....	....	....	....	....	....	....	28,390	.....do	7.1710
6420	Muirkirk pig, pink ends	....	....	....	....	....	....	....	....	31,890	.....do	7.3321
6421	Muirkirk pig, red ends	....	....	....	....	....	....	....	....	26,900	Granular, gray	7.2968

CAST IRON FURNISHED BY PRIVATE PARTIES FOR ORDNANCE MATERIAL.

No. of test.	Description.	Marks.	Tensile strength per square inch.	Fracture.
			Pounds.	
6006	2-pounder common shell.	Lot 1	15,900	Fine granular, dark gray.
6007	do	Lot 1	16,550	Do.
6008	do	Lot 1	16,100	Do.
6016	do	L 2	17,680	Do.
6017	do	L 3	21,190	Do.
6018	do	L 4	16,980	Do.
6019	do	L 5	22,200	Do.
6020	do	L 6	18,870	Do.
6021	do	L 7	18,080	Do.
6022	do	L 8	17,990	Do.
6023	do	L 9	15,980	Do.
6024	do	L 10	25,940	Do.
6025	do	L 11	20,100	Do.
6026	do	L 12	22,650	Do.
6027	do	L 13	21,520	Do.
6029	do	L 14	25,950	Fine granular, light gray.
6030	do	L 15	27,200	Do.
6031	do	L 16	27,650	Do.
6032	do	L 17	20,020	Fine granular, darker gray.
6033	do	L 18	15,600	Do.
6036	do	L 19	17,600	Variable fine granular, light gray.
6037	do	L 20	26,100	Fine granular. light gray.
6038	do	L 21	23,980	Do.
6039	do	L 22	23,800	Do.
6040	do	L 23	23,400	Do.
6046	do	L 24	22,960	Fine granular, dark gray.
6047	do	L 25	22,100	Do.
6048	do	L 26	21,010	Do.
6068	4-pounder common shell.	C L 1	22,450	Granular, gray.
6069	do	C L 2	23,850	Fine granular, gray.
6070	do	C L 3	27,950	Do.
6071	do	C L 4	26,900	Do.
6061	6-pounder common shell.	C L 2	32,850	Fine granular, light gray.
6062	do	C L 3	25,500	Fine granular, gray.
6063	do	C L 4	26,400	Do.
6064	do	C L 5	33,950	Fine granular, light gray.
6065	do	C L 6	31,450	Do.
6066	do	C L 7	30,400	Do.
6067	do	C L 8	25,350	Fine granular, gray.
6091	do	C L 13	26,000	Do.
6092	do	C L 13	26,850	Do.
6093	do	C L 13	26,600	Do.
6094	do	C L 14	27,450	Do.
6095	do	C L 14	27,450	Do.
6096	do	C L 14	29,000	Do.
6097	do	C L 15	28,350	Do.
6098	do	C L 15	28,100	Do.
6099	do	C L 15	28,000	Do.
6100	do	C L 16	27,950	Do.
6101	do	C L 16	27,500	Do.
6102	do	C L 16	26,000	Do.
6103	do	C L 17	27,000	Do.
6104	do	C L 17	31,500	Fine granular, light gray.
6105	do	C L 17	29,900	Do.
6106	do	C L 18	28,000	Fine granular, gray.
6107	do	C L 18	29,450	Do.
6132	do	C L 17–2	25,600	Granular, dark gray,
6133	do	C L 17–2	20,550	Do.
6134	do	C L 18–2	26,900	Do.
6135	do	C L 18–2	24,800	Do.
6153	do	C L 35	29,000	Fine granular, gray,
6154	do	C L 35–2	26,950	Do.
6155	do	C L 36	29,100	Do.
6156	do	C L 36–2	29,000	Do.
6157	do	C L 37	32,000	Do.
6158	do	C L 37–2	28,450	Do.
6159	do	C L 38	32,000	Do.
6160	do	C L 38–2	30,950	Do.
6161	do	C L 39	33,500	Do.
6162	do	C L 39–2	30,600	Do.
6277	do	C L 55	27,950	Granular, gray.

CAST IRON FURNISHED BY PRIVATE PARTIES FOR ORDNANCE MATERIAL—Continued.

No. of test.	Description.	Marks.	Tensile strength per square inch.	Fracture.
			Pounds.	
6278	6-pounder common shell.	C L 56	28,600	Granular, gray.
6279	....do	C L 57	27,000	Do.
6280	....do	C L 58	25,950	Do.
6281	....do	C L 59	28,400	Do.
6282	....do	C L 60	26,000	Do.
6283	....do	C L 82	31,400	Do.
6284	....do	C L 84	29,450	Do.
6285	....do	C L 85	26,500	Do.
6286	....do	C L 86	29,950	Do.
6287	....do	C L 88	30,100	Do.
6311	....do	C L 89-1	29,950	Do.
6312	....do	C L 90-2	30,000	Do.
6330	....do	C L 1	23,650	Fine granular, gray, small dark spot at the circumference.
6331	....do	C L 2	27,100	Fine granular, gray.
6332	....do	C L 3	30,100	Do.
6333	....do	C L 4	30,650	Do.
6334	....do	C L 5	28,200	Do.
6335	....do	C L 6	29,850	Do.
6336	....do	C L 7	26,150	Do.
6337	....do	C L 8	29,550	Do.
6338	....do	C L 9	25,700	Do.
6339	....do	C L 10	27,550	Do.
6340	....do	C L 11	28,100	Do.
6341	....do	C L 12	24,850	Do.
6342	....do	C L 13	30,650	Do.
6343	....do	C L 14	27,600	Do.
6344	....do	C L 9-2	25,400	Do.
6345	....do	C L 10-2	28,650	Do.
6346	....do	C L 8-2	28,100	Do.
6084	12-pounder common shell.	1	23,870	Do.
6085	....do	2	22,080	Do.
6086	....do	3	21,390	Do.
6087	....do	4	19,980	Do.
6088	....do	5	19,390	Do.
6089	....do	6	21,480	Do.
6090	....do	7	18,400	Granular, dark gray.
6124	....do	8	17,640	Do.
6125	....do	9	17,360	Do.
6126	....do	10	19,980	Do.
6127	....do	11	19,620	Do.
6128	....do	12	14,900	Do.
6137	....do	13	17,100	Do.
6138	....do	14	16,490	Do.
6139	....do	15	17,500	Do.
6141	....do	16	17,220	Do.
6142	....do	17	18,400	Do.
6143	....do	18	16,980	Do.
6148	....do	A	18,380	Do.
6149	....do	B	16,590	Do.
6174	....do	C	18,590	Do.
6175	....do	D	17,720	Do.
6176	....do	E	18,600	Do.
6177	....do	F	25,880	Granular, gray.
6178	....do	G	21,500	Do.
6179	....do	H	20,490	Do.
6189	....do	I	21,990	Granular, dark gray.
6190	....do	K	19,800	Do.
6191	....do	L	17,520	Do.
6192	....do	M	19,000	Do.
6193	....do	N	16,390	Do.
6194	....do	O	21,400	Do.
6195	....do	P	23,590	Granular, gray.
6196	....do	Q	27,300	Do.
6197	....do	R	26,080	Do.
6198	....do	S	22,100	Do.
6199	....do	G	25,850	Do.
6204	....do	O	23,200	Do.
6205	....do	T	17,750	Do.
6206	....do	U	22,100	Do.
6207	....do	V	18,820	Do.
6218	....do	W	19,590	Do.
6219	....do	X	18,000	Do.

CAST IRON FURNISHED BY PRIVATE PARTIES FOR ORDNANCE MATERIAL—Continued.

No. of test.	Description.	Marks.	Tensile strength per square inch.	Fracture.
			Pounds.	
6220	12-pounder common shell.	Y	19,110	Granular, gray.
6221	.....do	Z	23,380	Do.
6224	.....do	A_1	24,580	Do.
6225	.....do	B_1	22,800	Do.
6226	.....do	C_1	23,390	Do.
6227	.....do	D_1	24,080	Do.
6228	.....do	E_1	22,420	Do.
6229	.....do	F_1	24,390	Do.
6237	.....do	G_1	23,600	Do.
6238	.....do	H_1	20,200	Do.
6239	.....do	I_1	24,600	Do.
6240	.....do	J_1	20,950	Do.
6243	.....do	K_1	23,190	Do.
6244	.....do	L_1	21,600	Do.
6245	.....do	M_1	16,820	Do.
6248	.....do	N_1	29,350	Do.
6249	.....do	O_1	24,600	Do.
6274	.....do	L_1	23,340	Do.
6275	.....do	P_1	23,790	Do.
6276	.....do	Q_1	22,370	Do.
6000	15-pounder common shell.	C L 14	23,050	Fine granular, gray.
6001	.....do	C L 15	27,450	Do.
6002	.....do	C L 16	25,600	Do.
6003	.....do	C L 17	27,400	Do.
6004	.....do	C L 18	27,300	Do.
6005	.....do	C L 6	25,050	Do.
6051	.....do	C L 19	23,950	Do.
6052	.....do	C L 20	26,500	Do.
6053	.....do	C L 21	27,950	Do.
6054	.....do	C L 22	29,500	Do.
6055	.....do	C L 23	23,100	Do.
6056	.....do	C L 24	21,850	Granular, gray.
6057	.....do	C L 25	25,950	Fine granular, gray.
6058	.....do	C L 27	23,400	Do.
6059	.....do	C L 28	25,500	Do.
6060	.....do	C L 29	23,950	Do.
6075	.....do	C L 30	22,350	Granular, gray.
6076	.....do	C L 31	21,950	Do.
6077	.....do	C L 32	23,500	Do.
6078	.....do	C L 33	22,950	Do.
6079	.....do	C L 34	23,900	Do.
6080	.....do	C L 35	21,500	Do.
6081	.....do	C L 36	21,000	Do.
6112	.....do	2 C L 35	26,550	Fine granular, dark gray.
6113	.....do	2 C L 36	27,800	Do.
6114	.....do	C L 37	23,800	Coarse and fine granular, gray.
6115	.....do	C L 38	20,600	Do.
6116	.....do	C L 39	25,150	Fine granular, dark gray.
6117	.....do	C L 40	21,650	Coarse and fine granular, dark gray.
6118	.....do	C L 41	23,100	Fine granular, dark gray.
6119	.....do	C L 42	25,500	Do.
6120	.....do	C L 43	22,950	Do.
6121	.....do	C L 44	26,200	Do.
6122	.....do	C L 46	24,750	Do.
6136	.....do	C L 45	21,350	Granular, dark gray.
6144	.....do	2 C L 38	24,800	Do.
6145	.....do	3 C L 38	23,200	Do.
6146	.....do	2 C L 40	19,550	Do.
6147	.....do	3 C L 40	20,450	Do.
6163	.....do	C L 47	22,950	Granular, gray.
6164	.....do	C L 48	24,400	Do.
6165	.....do	C L 49	24,950	Do.
6166	.....do	C L 50	26,500	Do.
6167	.....do	C L 51	24,500	Do.
6168	.....do	C L 52	22,450	Do.
6169	.....do	C L 53	23,000	Do.
6170	.....do	C L 54	26,950	Do.
6171	.....do	C L 55	26,000	Do.
6172	.....do	C L 56	26,100	Do.
6173	.....do	C L 57	24,900	Do.
6180	.....do	C L 58	25,950	Do.
6181	.....do	C L 59	24,500	Do.
6182	.....do	C L 60	29,000	Fine granular, gray.

CAST IRON FURNISHED BY PRIVATE PARTIES FOR ORDNANCE MATERIAL—Continued.

No. of test.	Description.	Marks.	Tensile strength per square inch. *Pounds.*	Fracture.
6183	15-pounder common shell.	C L 61	25,000	Granular, gray.
6184	do	C L 62	27,400	Do.
6185	do	C L 63	22,950	Do.
6186	do	C L 64	22,400	Do.
6187	do	C L 65	25,500	Do.
6188	do	C L 66	23,100	Do.
6208	do	C L 67	24,000	Do.
6209	do	C L 68	23,550	Do.
6210	do	C L 69	25,600	Coarse and fine granular, gray.
6211	do	C L 70	26,000	Granular, gray.
6212	do	C L 71	27,050	Do.
6213	do	C L 72	24,500	Do.
6214	do	C L 73	23,450	Do.
6215	do	C L 74	24,000	Do.
6216	do	C L 75	28,400	Fine granular, gray.
6217	do	C L 76	28,000	Do.
6250	do	C L 77	25,100	Granular, gray.
6251	do	C L 78	24,300	Do.
6252	do	C L 79	26,700	Do.
6253	do	C L 80	24,550	Do.
6254	do	C L 81	26,000	Do.
6255	do	C L 82	23,150	Do.
6256	do	C L 83	23,600	Do.
6257	do	C L 84	24,250	Do.
6258	do	C L 85	25,100	Do.
6259	do	C L 86	24,800	Do.
6260	do	C L 87	23,150	Do.
6261	do	C L 88	24,350	Do.
6262	do	C L 89	25,900	Do.
6263	do	C L 90	26,000	Do.
6264	do	C L 91	25,400	Do.
6265	do	C L 92	25,550	Do.
6266	do	C L 93	24,950	Do.
6267	do	C L 94	25,150	Do.
6268	do	C L 95	24,300	Do.
6269	do	C L 96	23,800	Do.
6270	do	C L 97	24,950	Do.
6271	do	C L 98	22,700	Do.
6272	do	C L 99	23,250	Do.
6296	do	C L 1	28,450	Do.
6297	do	C L 2	26,100	Do.
6298	do	C L 3	28,900	Do.
6299	do	C L 4	25,000	Do.
6300	do	C L 5	26,950	Do.
6301	do	C L 6	26,600	Do.
6302	do	C L 7	26,000	Do.
6303	do	C L 8	27,100	Do.
6304	do	C L 9	27,950	Do.
6305	do	C L 10	23,350	Do.
6306	do	C L 11	27,200	Do.
6307	do	C L 12	29,900	Do.
6308	do	C L 13	25,100	Do.
6309	do	C L 14	21,000	Granular, gray, sandy spot at circumference.
6310	do	C L 15	23,950	Granular, gray.
6315	do	2 C L 14	24,600	Fine granular, gray.
6347	do	C L 16	21,500	Do.
6348	do	C L 17	21,850	Do.
6349	do	C L 18	21,500	Do.
6350	do	C L 19	25,600	Do.
6351	do	C L 20	18,900	Do.
6352	do	C L 17-2	24,000	Do.
6353	do	C L 18-2	21,450	Do.
6354	do	C L 19-2	24,400	Do.
6365	do	C L 16-2	21,450	Do.
6366	do	C L 17-2	26,500	Do.
6367	do	C L 18-2	24,900	Do.
6368	do	C L 20-2	23,950	Do.
6369	do	C L 17-3	21,500	Do.
6370	do	C L 18-3	26,450	Do.
6374	do	C L 16 A	24,100	Do.
6375	do	C L 16 B	26,000	Do.
6376	do	C L 20 D	23,000	Do.
6123	6″ R. F. shell	A 2	31,200	Fine granular, dark gray.

CAST IRON FURNISHED BY PRIVATE PARTIES FOR ORDNANCE MATERIAL—Continued.

No. of test.	Description.	Marks.	Tensile strength per square inch.	Fracture.
			Pounds.	
6236	Dynamite gun barrel.	D G$_2$ T$_2$	26,790	Granular, gray.
6318	Lyle life-saving projectile.	1	24,850	Fine granular, gray.
6319	.....do	2	26,100	Do.
6320	.....do	3	27,300	Do.
6323	.....do	4	23,400	Granular, gray.
6326	.....do	5	29,490	Do.
6327	.....do	6	28,200	Do.
6328	.....do	7	21,820	Granular, dark gray.
6355	.....do	8	18,800	Granular, gray.
6356	.....do	9	26,280	Do.
6357	.....do	10	21,990	Do.
6358	.....do	11	24,500	Do.
6359	.....do	12	19,580	Do.
6360	.....do	13	22,590	Do.
6363	.....do	18	25,980	Do.
6364	.....do	19	30,100	Do.

MISCELLANEOUS CAST IRONS.

6397	From gear tooth forwarded by secretary of Mississippi River Commission.	3708	12,200	Fine and medium granulation, gray.
6380	.....do	3709	12,080	Do.

SPECIMENS FROM FRACTURED CRADLE OF 12″ MORTAR CARRIAGE, No. 193, MODEL 1896. MANUFACTURED BY COLUMBUS MACHINE COMPANY.

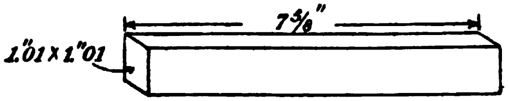
[From Sandy Hook Proving Ground.]

6388	Specimen from side of 4½″ pin hole opposite fractured surface.		28,280	Granular, gray.
6389	Specimen from side of 4½″ pin hole next fractured surface.		16,900	Granular, gray, spongy place along middle of stem on one side.
6398	Specimen from side of 4½″ pin hole on opposite side of fracture, from No. 6389.		27,790	Granular, gray, slightly spongy along side of stem next the original fracture in the cradle.
6411*	Annealed iron	0	30,880	Fine granular, light gray.

*Specific gravity, 7.2046.

CAST IRON FROM A GEAR.

TRANSVERSE TESTS FOR MISSISSIPPI RIVER COMMISSION.

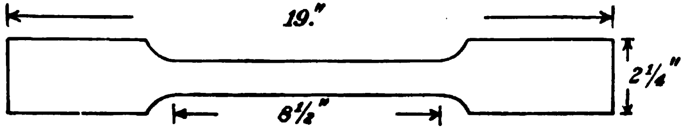


Specimen tested with one fixed end, loaded at the other, 1" long. Three tests taken successively along the length of the specimen.

No. of test.	Description.	Ultimate strength.	
		Total.	Modulus of rupture, R.
		Pounds.	*Pounds.*
500	Center punch mark on tension side	4,220	24,580
501	Center punch mark on compression side	4,280	24,980
502	Center punch mark on tension side	4,346	25,320

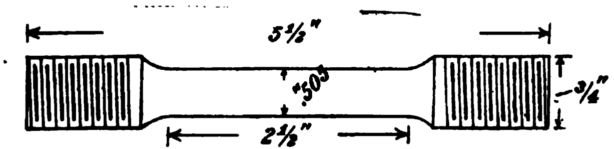
Appearance of fractures, fine granular, with medium granulation next center punch side of the bar.

NICKEL STEEL BOILER PLATE.



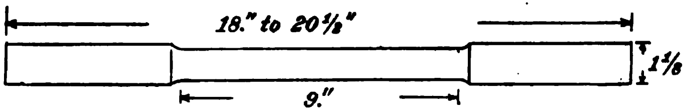
No. of test.	Mark on specimen.	Dimensions.		Sectional area.	Elastic limit.		Ultimate strength.		Elongation in 8 inches.		Area at fracture.	Contraction of area.	Appearance of fracture.	Elongation of inch sections.
		Width.	Thickness.		Total.	Per square inch.	Total.	Per square inch.						
		Inch.	*Inch.*	*Sq. in.*	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*	*In.*	*Per ct.*	*In. In. Sq. in.*	*Per ct.*		" " " " " " " "
9798	1	.989	.356	.352	14,600	41,480	21,760	61,820	1.95	24.4	.73×.20=.146	58.5	Silky, lamellar	.16, .18, .53*, .25, .22, .21, .21, .19
9799	2	.989	.342	.338	14,280	42,250	20,840	61,660	2.01	25.1	.72×.19=.137	59.5	Silky	.20, .22, .55*, .26, .22, .21, .18, .17
9800	3	.991	.353	.350	14,500	41,430	21,450	61,290	1.95	24.4	.73×.21=.153	56.3	Silky, lamellar	.21, .17, .19, .23, .42*, .40*, .18, .15
9801	4	.991	.354	.351	14,480	41,250	21,710	61,850	1.89	23.6	.73×.21=.153	56.4	do	.20, .18, .17, .19, .56*, .26, .18, .15
9802	6	.989	.402	.398	18,550	46,610	25,320	63,620	2.12	26.5	.70×.23=.161	59.5	Silky	.16, .17, .20, .28, .26, .25, .59*, .21

NICKEL STEEL FROM LOCOMOTIVE PISTON RODS.



No. of test.	Mark on specimen.	Sectional area.	Elastic limit		Ultimate strength.		Elongation in 2 inches.		Area at fracture.	Contraction of area.	Appearance of fracture.	Elongation of inch sections.	
			Total.	Per square inch.	Total.	Per square inch.							
		Sq. in.	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*	*Inch.*	*Per ct.*	*In. Sq. in.*	*Per cent.*		″	″
9788	A	.20	11,720	58,600	15,460	77,300	.54	27.	Diam. .31=.075...	62.5	Fine silky.........	.40*,	.14
9789	B	.20	10,900	54,500	13,800	69,000	.54	27.	Diam. .30=.071...	62.5	.....do.........	.13,	.41*
9790	C	.20	10,100	50,500	14,600	73,000	.54	27.	Diam. .31=.075...	62.5	.....do.........	.11,	.48*
9791	D	.20	9,950	49,750	14,410	72,050	.54	27.	Diam. .31=.075...	62.5	.....do.........	.15,	.39*
9792	E	.20	10,600	53,000	14,680	73,400	.75	37.5	Diam. .33=.086...	57.	.....do.........	.30,	.45*
9793	F	.20	10,500	52,500	17,100	85,500	.60	30.	Diam. .32=.080...	60.	.....do.........	.35*,	.25
9794	H	.20	10,550	52,750	17,690	88,450	.52	26.	Diam. .32=.080...	60.	.....do.........	.40*,	.12
9795	I	.20	11,200	56,000	17,200	86,000	.59	29.5	Diam. .33=.086...	57.	.....do.........	.36*,	.23
9796	J	.20	10,900	54,500	15,100	75,500	.41	20.5	Diam. .31=.075...	62.5	.....do.........	.36*,	.05
9797	K	.20	10,920	54,600	18,360	91,800	.52	26.	Diam. .33=.086...	57.	.....do.........	.39*,	.13

STEEL FROM LOCOMOTIVE PISTON ROD.



No. of test.	Mark on specimen.	Diameter.	Sectional area.	Elastic limit.		Ultimate strength.		Elongation in 8 inches.		Area at fracture.	Contraction of area.	Appearance of fracture.	Elongation of inch sections.
				Total.	Per square inch.	Total.	Per square inch.						
		Inches.	*Sq. inch.*	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*	*Inches.*	*Per ct.*	*In. Sq. in.*	*Per ct.*		″ ″ ″ ″ ″ ″ ″ ″
9781	Engine 134.	1.001	.787	25,300	32,150	58,190	73,940	1.98	24.8	Diam. .73=.419...	46.8	Silky	.18, .19, .21, .33, .51*, .22, .18, .16

STEEL FROM LOCOMOTIVE DRIVING AXLES.

No. of test.	Mark on specimen.	Diameter.	Sectional area.	Elastic limit, total.	Elastic limit, per square inch.	Ultimate strength, total.	Ultimate strength, per square inch.	Elongation in 8 inches.		Area at fracture.	Contraction of area.	Appearance of fracture.	Elongation of inch sections.
9782	Engine 923-8.	1.008	.798	30,700	38,470	69,100	86,590	1.40	17.5	Diam. .81=.515...	35.5	Silky, trace of granulation.	.11, .12, .15, .35*, .27, .13, .13, .14
9783	Engine 923-9.	1.007	.796	30,850	38,760	70,200	88,190	1.38	17.3	Diam. .84=.554...	30.4	Silky, interspersed with granular metal.	.14, .16, .19, .35*, .18, .13, .12, .11
9784	Engine 283-8	.977	.750	28,200	37,600	62,650	83,530	1.49	18.6	Diam. .78=.478...	36.3	.....do	.27, .38*, .16, .15, .17, .13, .13, .10
9785	Engine 283-9.	1.002	.789	29,400	37,260	67,000	84,920	1.67	20.9	Diam. .82=.528...	33.1	.....do	.13, .14, .18, .39*, .27, .20, .19, .17
9786	Engine 1428-8.	1.007	.796	21,300	26,760	51,900	65,200	1.51	18.9	Diam. .75=.442...	44.5	Silky	.12, .12, .11, .13, .12, .15, .37*, .39*
9787	Engine 1428-9.	1.005	.793	22,400	28,250	56,100	70,740	1.68	21.0	Diam. .76=.454...	42.7	.....do	.14, .15, .14, .16, .16, .19, .42*, .32

STEEL BAR FOR STANDARDIZING TESTING MACHINE AT RARIG ENGINEERING COMPANY.

No. 6526.

Marks, 3328–1.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00020	.00010	....	....	
20,000	.00055	.00035	....	....	
30,000	.00095	.00040	0.	....	
35,000	.00115	.00020	....	....	
40,000	.00130	.00015	....	....	
50,000	.00155	.00025	....	....	
51,000	.00160	.00005	....	....	
52,000	.00165	.00005	....	....	Elastic limit.
53,000	.01200	.01035	....	....	
54,000	.01350	.00150	....	....	
55,000	.01410	.00060	....	....	
56,000	.01455	.00045	....	....	
58,000	.01590	.00135	....	....	
60,000	.01750	.00160	....	....	
64,000	.02150	.00400	....	....	
68,000	.02600	.00450	....	....	
72,000	.03050	.00450	....	....	
76,000	.03700	.00650	....	....	
80,000	.04425	.00725	....	....	
93,350	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section........pounds..	93,350
Elastic limit per square inch of original section........do...	52,000
Elongation per inch after rupture........inch..	.2200
Elongation per inch under strain at elastic limit........do...	.00165
Reduction in diameter at point of rupture........do...	.085
Reduction in area after rupture, per cent of original section........	30.7
Position of rupture........	at middle of stem
Character of broken surface........	fine granular
Elongation of inch sections........	″.20*, ″.24*

No. 6527.

Marks, 3328-4.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00005	.00005	0.	....	
10,000	.00020	.00015	....	....	
20,000	.00055	.00035	....	....	
30,000	.00095	.00040	0.	....	
40,000	.00125	.00030	....	....	
50,000	.00165 .01300	.00040 .01135	....	....	Elastic limit.
51,000	.01320	.00020	....	....	
52,000	.01350	.00030	....	....	
53,000	.01495	.00145	....	....	
54,000	.01530	.00035	....	....	
56,000	.01710	.00180	....	....	
58,000	.01875	.00165	....	....	
60,000	.02145	.00270	....	....	
64.000	.02600	.00455	....	....	
68,000	.03100	.00500	....	....	
72,000	.03700	.00600	....	....	
76,000	.04450	.00750	....	....	
80,000	.05600	.01150	....	....	
90,150	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	90,150
Elastic limit per square inch of original section........do...	50,000
Elongation per inch after rupture........inch..	.2050
Elongation per inch under strain at elastic limit........do...	.00165
Reduction in diameter at point of rupture........do...	.085
Reduction in area after rupture, per cent of original section........	30.7
Position of rupture........	at middle of stem
Character of broken surface........	fine granular 70 per cent, silky 30 per cent
Elongation of inch sections........	″.21*, ″.20*

No. 6528.

Marks, 3328–7.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00005	.00005	0.		
10,000	.00020	.00015			
20,000	.00055	.00035			
30,000	.00095	.00040			
40,000	.00125	.00030	0.		
50,000	.00165	.00040			Elastic limit.
	.01000	.00835			
51,000	.01045	.00045			
52,000	.01085	.00040			
53,000	.01135	.00050			
54,000	.01190	.00055			
56,000	.01390	.00200			
58,000	.01500	.00110			
60,000	.01660	.00160			
64,000	.02050	.00390			
68,000	.02450	.00400			
72,000	.03000	.00550			
76,000	.03500	.00500			
80,000	.04150	.00650			
95,450					Tensile strength.

General summary.

Tensile strength per square inch of original section .... pounds..	95,450
Elastic limit per square inch of original section .... do...	50,000
Elongation per inch after rupture .... inch..	.2050
Elongation per inch under strain at elastic limit .... do...	.00165
Reduction in diameter at point of rupture .... do...	.085
Reduction in area after rupture, per cent of original section	30.7
Position of rupture	″.9 from neck
Character of broken surface	silky 70 per cent, granular 30 per cent
Elongation of inch sections	″.16, ″.25*

No. 6529.

Marks, 3329–1.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
30,000	.00095	.00035	....	....	
40,000	.00130	.00035	0.	....	
48,000	.00160	.00030	....	....	
49,000	.00165	.00005	....	....	Elastic limit.
50,000	.00350	.00185	....	....	
51,000	.01450	.01100	....	....	
52,000	.01500	.00050	....	....	
54,000	.01665	.00165	....	....	
56,000	.01900	.00235	....	....	
58,000	.02100	.00200	....	....	
60,000	.02400	.00300	....	....	
64,000	.02925	.00525	....	....	
68,000	.03475	.00550	....	....	
72,000	.04200	.00725	....	....	
87,300	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	87,300
Elastic limit per square inch of original section	do...	49,000
Elongation per inch after rupture	inch..	.2350
Elongation per inch under strain at elastic limit	do...	.00165
Reduction in diameter at point of rupture	do...	.125
Reduction in area after rupture, per cent of original section		43.3
Position of rupture		″.75 from neck
Character of broken surface		fine silky
Elongation of inch sections		″.33*, ″.14

Marks, 3329–4.
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
30,000	.00100	.00040	....	....	
40,000	.00135	.00035	0.	....	
49,000	.00160	.00025	....	....	
50,000	.00165	.00005	....	....	Elastic limit.
	.01350	.01185	....	....	
51,000	.01380	.00030	....	....	
52,000	.01410	.00030	....	....	
53,000	.01500	.00090	....	....	
54,000	.01600	.00100	....	....	
56,000	.01760	.00160	....	....	
58,000	.02015	.00255	....	....	
60,000	.02300	.00285	....	....	
64,000	.02750	.00450	....	....	
68,000	.03350	.00600	....	....	
72,000	.04000	.00650	....	....	
76,000	.05000	.01000	....	....	
80,000	.06250	.01250	....	....	
88,450	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	88,450
Elastic limit per square inch of original section	do	50,000
Elongation per inch after rupture	inch	.2400
Elongation per inch under strain at elastic limit	do	.00165
Reduction in diameter at point of rupture	do	.125
Reduction in area after rupture, per cent of original section		43.3
Position of rupture		″.8 from neck
Character of broken surface		fine silky
Elongation of inch sections		″.16, ″.32*

No. 6531.

Marks, 3329-7
Diameter, ″.505.
Sectional area, .20 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	
30,000	.00100	.00035	....	....	
40,000	.00135	.00035	0.	....	
47,000	.00155	.00020	....	....	Elastic limit.
48,000	.00300	.00145	....	....	
	.01300	.01000	....	....	
49,000	.01330	.00030	....	....	
50,000	.01370	.00040	....	....	
51,000	.01440	.00070	....	....	
52,000	.01550	.00110	....	....	
54,000	.01750	.00200	....	....	
56,000	.01950	.00200	....	....	
58,000	.02150	.00200	....	....	
60,000	.02400	.00250	....	....	
64,000	.02925	.00525	....	....	
68,000	.03600	.00675	....	....	
72,000	.04400	.00800	....	....	
76,000	.05500	.01100	....	....	
80,000	.07000	.01500	....	....	
86,600	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	86,600
Elastic limit per square inch of original section	do...	47,000
Elongation per inch after rupture	inch..	.2200
Elongation per inch under strain at elastic limit	do...	.00155
Reduction in diameter at point of rupture	do...	.095
Reduction in area after rupture, per cent of original section		34.0
Position of rupture		at middle of stem
Character of broken surface		silky
Elongation of inch sections		″.20*, ″.24*

COLD-ROLLED STEEL FOR STANDARDIZING TESTING MACHINE AT WORKS OF AMERICAN ORDNANCE COMPANY.

No. 6953.

Marks No. 1.
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00060	.00025	....	....	
30,000	.00095	.00035	....	....	
40,000	.00130	.00035	0.	....	
50,000	.00160	.00030	....	....	
60,000	.00200	.00040	....	....	
70,000	.00245	.00045	....	....	
72,000	.00260	.00015	....	....	Elastic limit.
73,000	.00300	.00040	....	....	
74,000	.00340	.00040	....	....	
75,000	.00410	.00070	....	....	
76,000	.00505	.00095	....	....	
78,000	.00975	.00470	....	....	
80,000	.01250	.00275	....	....	
85,280	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	85,280
Elastic limit per square inch of original section ....do...	72,000
Elongation per inch after rupture ....inch..	.2050
Elongation per inch under strain at elastic limit ....do...	.00260
Reduction in diameter at point of rupture............do...	.204
Reduction in area after rupture, per cent of original section............	59.3
Position of rupture............	1″.1 from neck
Character of broken surface	fine silky, cup shaped
Elongation of inch sections............	″.14, ″.27*

No. 6954.

Marks, No. 3.
Diameter, ".564.
Sectional area, .25 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00060	.00025	....	....	
30,000	.00100	.00040	....	....	
40,000	.00140	.00040	....	....	
50,000	.00170	.00030	....	....	
60,000	.00205	.00035	0.	....	
70,000	.00250	.00045	....	....	
73,000	.00265	.00015	....	....	Elastic limit.
74,000	.00285	.00020	....	....	
75,000	.00305	.00020	....	....	
76,000	.00335	.00030	....	....	
77,000	.00350	.00015	....	....	
78,000	.00450	.00100	....	....	
79,000	.00600	.00150	....	....	
80,000	.01200	.00600	....	....	
84,480	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	84,480
Elastic limit per square inch of original section	do	73,000
Elongation per inch after rupture	inch	.1900
Elongation per inch under strain at elastic limit	do	.00265
Reduction in diameter at point of rupture	do	.194
Reduction in area after rupture, per cent of original section		57.0
Position of rupture		1" from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		".29*, ".09

No. 6955.

Marks, No. 5.
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00030	.00020	....	....	
20,000	.00060	.00030	....	....	
30,000	.00095	.00035	....	....	
40,000	.00135	.00040	....	....	
50,000	.00160	.00025	....	....	
60,000	.00195	.00035	0.	....	
70,000	.00240	.00045	....	....	
74,000	.00260	.00020	....	....	Elastic limit.
75,000	.00290	.00030	....	....	
76,000	.00330	.00040	....	....	
77,000	.00355	.00025	....	....	
78,000	.00500	.00145	....	....	
79,000	.00675	.00175	....	....	
80,000	.01325	.00650	....	....	
85,280	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section ....pounds..	85,280
Elastic limit per square inch of original section ....do...	74,000
Elongation per inch after rupture ....inch..	.1950
Elongation per inch under strain at elastic limit ....do...	.00260
Reduction in diameter at point of rupture............do...	.194
Reduction in area after rupture, per cent of original section	57.
Position of rupture............	1″.1 from neck
Character of broken surface	fine silky, cup shaped
Elongation of inch sections............	″.30*, ″.09

No. 6956.

Marks, No. 7.
Diameter, ".564.
Sectional area, .25 square inch.
Gauged length, 2".

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00060	.00025	....	....	
30,000	.00100	.00040	....	....	
40,000	.00135	.00035	....	....	
50,000	.00170	.00035	....	....	
60,000	.00200	.00030	0.	....	
70,000	.00245	.00045	....	....	
74,000	.00265	.00020	....	....	Elastic limit
75,000	.00295	.00030	....	....	
76,000	.00310	.00015	....	....	
77,000	.00340	.00030	....	....	
78,000	.00400	.00060	....	....	
79,000	.00460	.00060	....	....	
80,000	.01015	.00555	....	....	
85,040	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds	85,040
Elastic limit per square inch of original section	do	74,000
Elongation per inch after rupture	inch	.1950
Elongation per inch under strain at elastic limit	do	.00265
Reduction in diameter at point of rupture	do	.204
Reduction in area after rupture, per cent of original section		59.3
Position of rupture		at middle of stem
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		".20*, ".19*

No. 6957.

Marks, No. 9.
Diameter, ″.564.
Sectional area, .25 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
5,000	.00010	.00010	0.	....	
10,000	.00035	.00025	....	....	
20,000	.00065	.00030	....	....	
30,000	.00100	.00035	....	....	
40,000	.00135	.00035	....	....	
50,000	.00165	.00030	....	....	
60,000	.00200	.00035	0.	....	
70,000	.00245	.00045	....	....	
73,000	.00255	.00010	....	....	
74,000	.00270	.00015	....	....	Elastic limit.
75,000	.00295	.00025	....	....	
76,000	.00310	.00015	....	....	
77,000	.00335	.00025	....	....	
78,000	.00410	.00075	....	....	
79,000	.00515	.00105	....	....	
80,000	.01000	.00485	....	....	
85,200	....	....	....	....	Tensile strength.

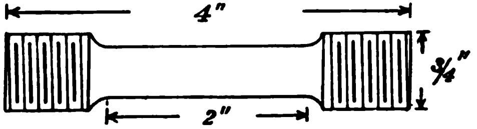
General summary.

Tensile strength per square inch of original section	pounds..	85,200
Elastic limit per square inch of original section	do...	74,000
Elongation per inch after rupture	inch..	.1950
Elongation per inch under strain at elastic limit	do...	.00270
Reduction in diameter at point of rupture	do...	.204
Reduction in area after rupture, per cent of original section		59.8
Position of rupture		1″.1 from neck
Character of broken surface		fine silky, cup shaped
Elongation of inch sections		″.28*, ″.11

CRANE-WAY RAILS FOR WATERVLIET ARSENAL.

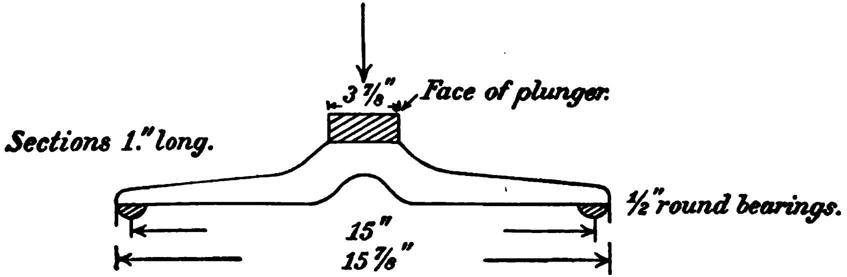
STEEL CASTINGS.

TENSION TESTS.



No. of test.	Mark on specimen.	Diameter.	Sectional area.	Elastic limit.		Ultimate strength.		Elongation in 2 inches.		Area of fracture.	Contraction of area.	Appearance of fracture	Elongation of inch sections.
				Total.	Per square inch.	Total.	Per square inch.						
		Inch.	Sq. inch.	Pounds.	Pounds.	Pounds.	Pounds.	Inches.	Per ct.	In. Sq. in.	Per cent.		
9709	A1	.505	.20	8,700	43,500	17,200	86,000	.20	10.0	Diam., .47 = .173	13.5	Granular	".11*, ".09
9710	A2	.505	.20	8,950	44,750	12,020	60,100	.06	3.0	Diam., .48 = .181	9.5	Granular, flaky spot at circumference	.04*, .02
9711	A3	.505	.20	9,040	45,200	17,510	87,550	.21	10.5	Diam., .47 = .173	13.5	Granular, silky spot at circumference	.12*, .09
9712	A4	.505	.20	9,500	47,500	17,200	86,000	.17	8.5	Diam., .48 = .181	9.5	Granular	.08, .09*
9713	A5	.505	.20	9,620	48,100	17,250	86,250	.16	8.0	Diam., .48 = .181	9.5	....do	.09*, .07
9714	A6	.505	.20	9,100	45,500	13,350	66,750	.09	4.5	Diam., .49 = .189	5.5	Granular, spongy streak	.03, .06*
9715	A7	.505	.20	9,700	48,500	16,580	82,900	.12	6.0	Diam., .48 = .181	9.5	Granular	.08*, .04
9716	A8	.505	.20	8,200	41,000	10,300	51,500	.06	3.0	Diam., .49 = .189	5.5	Granular 15 per cent, dark spongy metal 85 per cent.	.05*, .01
9717	B1	.505	.20	8,100	40,500	16,100	80,500	.17	8.5	Diam., .48 = .181	9.5	Granular, silky spot at circumference	.10*, .07
9718	B2	.505	.20	8,420	42,100	15,500	77,500	.13	6.5	Diam., .48 = .181	9.5	Granular	.06, .07*
9719	B3	.505	.20	8,060	40,300	15,020	75,100	.11	5.5	Diam., .48 = .181	9.5	Granular, silky spot at circumference	.06*, .05*
9720	B4	.505	.20	8,850	44,250	16,920	84,600	.20	10.0	Diam., .47 = .173	13.5	....do	.12*, .08
9721	B5	.505	.20	8,200	41,000	16,200	81,000	.18	9.0	Diam., .47 = .173	13.5	....do	.10*, .08
9722	B6	.505	.20	7,850	39,250	10,900	54,500	.05	2.5	Diam., .50 = .196	2.0	Granular, small spongy spot at side	.02, .03*
9723	B7	.505	.20	8,300	41,500	16,660	83,300	.20	10.0	Diam., .47 = .173	13.5	Granular, silky spot at circumference	.09, .11*
9724	B8	.505	.20	6,100	30,500	6,500	32,500	.04	2.0	Diam., .50 = .196	2.0	Granular 15 per cent, dark colored spongy 85 per cent.	.01, .03*
9725	OB	.505	.20	8,680	43,400	17,100	85,500	.21	10.5	Diam., .47 = .173	13.5	Granular, silky spot at circumference	.12*, .09

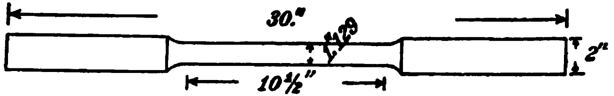
Transverse Tests of Sections of Rails.



Applied loads.	Deflections.								Remarks.
	Marks on sections.								
	A_9 center.	A_{10} center.	A_{11} center.	B_9 center.	B_{10} center.	B_{11} center.	A_{12} end.	B_{12} end.	
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
200	0.	0.	0.	0.	0.	0.	0.	0.	Initial load.
500	.02	.01	.01	0.	0.	.01	.01	.01	
1,000	.04	.02	.03	.02	.01	.02	.03	.02	
200	.01	0.	.01	0.	0.	0.	0.	0.	
1,500	.06	.04	.04	.03	.03	.03	.04	.04	
2,000	.07	.05	.07	.05	.04	.05	.05	.06	
200	.01	.01	.01	0.	0.	.01	0.	0.	
2,500	.10	.07	.11	.07	.07	.08	.07	.08	
2,800	....	....	Fractured, spongy metal.	....	....	....	....	....	
3,000	.12	.09	....	.13	.11	.11	.09	.11	
200	.03	.01	....	.05	.05	.01	.01	.03	
3,100	.14	....	....	.14	.14	.15	.10	.14	
3,200	.15	.10	....	.15	.15	.17	.11	.15	
3,300	.17	.12	....	.17	.16	.19	.12	.18	
3,400	.21	.14	....	.18	.17	.20	.13	.22	
3,500	.25	.18	....	.19	.19	.22	.14	.26	
3,600	.29	.21	....	.21	.21	.24	.15	.31	
3,700	.34	.24	....	.24	.25	.26	15+	.36	
3,800	.39	.29	....	.27	.28	.29	.16	.41	
3,900	.46	.34	....	.29	.32	.31	.17	.47	
4,000	.52	.39	....	.33	.35	.36	.19	.54	
200	.39	.28	....	.24	.25	.26	.09	.46	

WROUGHT IRON BAR FROM ARSENAL SMITH SHOP.

SPECIMEN TURNED DOWN FROM A BAR 2⅛ INCHES DIAMETER.



No. of test.	Diameter.	Sectional area.	Elastic limit.		Ultimate strength.		Elongation in 10 inches.		Area at fracture.	Contraction of area.	Appearance of fracture.	Elongation of inch sections.
			Total.	Per square inch.	Total.	Per square inch.						
	Inches.	*Sq. inch.*	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*	*Inches.*	*Per cent.*	*In. Sq. in.*	*Per cent.*		
9677	1.129	1.00	....	27,200	....	47,400	1.20	12.0	Diam., 1.00=.785	21.5	Fibrousseamy. Opened cracks along surface of stem.	″.08, ″.09, ″.09, ″.10, ″.10, ″.12, ″.13, ″.12, ″.13, ″.24*.

BRONZE.

BRONZE FIRING-VALVE BUSHING FOR DYNAMITE GUN.

No. 6627.

Marks, F. V. B. 8.
Diameter, ″.798.
Sectional area, .50 square inch.
Gauged length, 2″.

Applied loads per square inch.	Elongation per inch.	Successive elongation per inch.	Permanent set.	Successive permanent set.	Remarks.
Pounds.	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,000	0.	0.	0.	0.	Initial load.
2,000	.00005	.00005	0.	....	
3,000	.00015	.00010	....	....	
4,000	.00025	.00010	....	....	
5,000	.00030	.00005	....	....	
6,000	.00040	.00010	....	....	
7,000	.00050	.00010	....	....	
8,000	.00060	.00010	....	....	
9,000	.00070	.00010	....	....	
10,000	.00080	.00010	....	....	
11,000	.00090	.00010	....	....	
12,000	.00105	.00015	....	....	
13,000	.00120	.00015	....	....	Elastic limit.
14,000	.00140	.00020	....	....	
15,000	.00170	.00030	.00045	.00045	
16,000	.00225	.00055	....	....	
17,000	.00325	.00100	....	....	
18,000	.00485	.00160	....	....	
19,000	.00800	.00315	....	....	
20,000	.01125	.00325	....	....	
24,240	....	....	....	....	Tensile strength.

General summary.

Tensile strength per square inch of original section	pounds..	24,240
Elastic limit per square inch of original section	do...	13,000
Elongation per inch after rupture	inch..	.0550
Elongation per inch under strain at elastic limit	do...	.00120
Reduction in diameter at point of rupture	do...	.018
Reduction in area after rupture, per cent of original section		2.4
Position of rupture		″.25 from neck
Character of broken surface		brownish-lavender colored

Description.	Marks.	Diameter.	Sectional area.	Tensile strength per square inch.	Elongation.	Contraction of area.	Fracture.
		Inch.	*Sq. in.*	*Pounds.*	*Per cent.*	*Per cent.*	
Cylinder 5″ barbette carriage		.564	.25	27,560	14.5	15.2	Light and dark yellow.
Do		.564	.25	32,400	18.0	21.6	Uniform light yellow.
Elevating rack	No. 3 Bz	.564	.25	28,880	9.3	18.4	Lemon yellow and copper colored, spongy.
Do	No. 2 Bz	.564	.25	30,840	20.3	21.6	Uniform light yellow.
Recoil buffer, 10″ disappearing carriage, No. 15, from Fort Greble.		.505	.20	24,500	6.0	9.5	Dark brown, copper colored, light yellow spot at the circumference.
Counter recoil buffer, 12″ disappearing carriage.		.564	.25	46,040	36.0	44.8	Uniform light yellow.
Recoil buffer, 12″ disappearing carriage, No. 24, North Point.	Poole No. 3 Bz.	1.129	1.00	6,420	Not appreciable		Light greenish yellow and brown, spongy.
	do	1.129	1.00	7,450	do		Do.
	North Point	.798	.50	15,000	6.0	4.4	Dark brown and dark copper colored, spongy.
Lyle life-saving gun	L L S G No. 2.	.798	.50	48,440	36.5	31.6	Uniform light golden yellow. Hardness = 4.51.
Nuts, 12″ disappearing carriage	No. 3 Bz	.798	.50	29,400	8.0	14.0	Greenish yellow and lavender intermingled.
No. 2 bronze		.564	.25	29,200	14.7	21.6	Light yellow and golden yellow.
Do	4	.564	.25	30,840	23.0	21.6	Light golden yellow.
Do	6	.564	.25	32,280	22.0	30.8	Uniform light yellow.
No. 3 bronze		.564	.25	42,000	8.7	18.4	Light yellow.
MANGANESE BRONZE.							
Metal from the Wm. Cramp Co., specimen from ingot; cast in chill at the Watertown Arsenal foundry.		.564	.25	72,880	38.0	44.8	Uniform light yellow.
		.564	.25	73,200	38.3	44.8	Do.
Recoil buffer, 12″ disappearing carriage.	No. 1	.798	.50	73,900	34.7	35.6	Do.
Do	No. 2	.798	.50	69,000	37.7	39.6	Do.
Do	No. 3	.798	.50	72,800	38.0	37.6	Do.

BRONZE GUN-CARRIAGE METAL.

6-POUNDER GUN MOUNTS.

Description.	Marks.	Diameter.	Sectional area.	Tensile strength per square inch.	Elongation in 2 inches.	Contraction of area.	Fracture.
		Inch.	*Sq. inch.*	*Pounds.*	*Per cent.*	*Per cent.*	
Pivot yoke	A 12 P Y 6	.798	.50	44,840	44.0	35.6	Uniform golden-yellow color.
Do.	A 13 P Y 6	.798	.50	50,960	44.0	33.6	Do.
Do.	A 14 P Y 6	.798	.50	47,160	40.0	31.6	Do.
Do.	A 15 P Y 6	.798	.50	39,600	21.5	20.8	Light lavender color, with yellow metal at circumference.
Do.	A 16 P Y 6	.798	.50	42,060	25.0	23.0	Uniform golden yellow.
Do.	A 17 P Y 6	.798	.50	39,860	21.0	23.0	Light yellow, with zone of lavender-colored metal.
Do.	A 18 P Y 6	.798	.50	45,600	40.5	31.6	Uniform light golden yellow.
Do.	A 19 P Y 6	.798	.50	41,420	16.5	9.2	Dark brown and lavender color.
Do.	A 20 P Y 6	.798	.50	42,460	24.0	16.4	Light yellow, with lavender-colored tinge on one side.
Do.	A 22 P Y 6	.798	.50	23,600	10.0	14.0	Dark-yellow and golden-yellow metal intermingled.
Do.	A 24 P Y 6	.798	.50	42,360	49.5	33.6	Uniform light yellow.
Do.	A 25 P Y 6	.798	.50	42,780	49.5	35.6	Do.
Do.	A 26 P Y 6	.798	.50	39,840	47.0	33.6	Do.
Do.	A 27 P Y 6	.798	.50	40,760	49.0	33.6	Do.
Do.	A 28 P Y 6	.798	.50	31,560	25.0	23.0	Golden yellow, with dark-colored metal at circumference.
Do.	A 29 P Y 6	.798	.50	37,340	32.5	33.6	Do.
Do.	A 30 P Y 6	.798	.50	40,020	48.0	33.6	Uniform light yellow.
Do.	A 31 P Y 6	.798	.50	43,720	49.5	41.6	Do.
Do.	A 32 P Y 6	.798	.50	21,600	3.5	2.0	Lavender-colored, brown, and yellow metal intermingled.

BRONZE GUN-CARRIAGE METAL—Continued.

6-POUNDER GUN MOUNTS—Continued.

Description.	Marks.	Diameter.	Sectional area.	Tensile strength per square inch.	Elongation in 2 inches.	Contraction of area.	Fracture.
		Inch.	*Sq. inch.*	*Pounds.*	*Per cent.*	*Per cent.*	
Pivot yoke	A 23 P Y 6	.798	.50	43,200	45.5	33.6	Uniform light yellow.
Do.	A 34 P Y 6	.798	.50	44,060	50.5	39.6	Do.
Do.	A 35 P Y 6	.798	.50	36,220	42.5	33.6	Do.
Do.	A 36 P Y 6	.798	.50	39,480	48.5	35.6	Do.
Do.	A 37 P Y 6	.798	.50	36,240	49.5	33.6	Do.
Do.	A 38 P Y 6	.798	.50	42,300	55.0	41.6	Do.
Do.	A 39 P Y 6	.798	.50	42,040	49.5	35.6	Do.
Do.	A 40 P Y 6	.798	.50	37,800	42.5	35.6	Do.
Do.	A 41 P Y 6	.798	.50	27,960	23.5	18.6	Brown and light yellow, spongy.
Do.	A 42 P Y 6	.798	.50	27,400	25.5	23.0	Light and dark yellow.
Do.	A 44 P Y 6	.798	.50	39,600	42.5	27.4	Dark-yellow and brown metal intermingled.
Do.	A 45 P Y 6	.798	.50	24,560	22.0	20.8	Light yellow, with streaks of golden yellow.
Do.	A 46 P Y 6	.798	.50	31,580	30.0	23.0	Light and dark yellow and brown-colored metal.
Do.	A 49 P Y 6	.798	.50	26,760	25.0	23.0	Light and dark yellow, with streaks of golden yellow.
Do.	A 57 P Y 6	.798	.50	36,200	49.0	33.6	Uniform light yellow.
Do.	A 58 P Y 6	.798	.50	26,960	24.0	23.0	Light yellow, with streaks of light-brown metal.
Do.	A 60 P Y 6	.798	.50	34,200	39.0	33.6	Light and dark yellow metal intermingled.
Do.	A 63 P Y 6	.798	.50	31,180	28.0	29.4	Light and dark yellow, with streaks of golden yellow.

Do	A 64 P Y 6	.798	.50	32,800	37.5	31.6	Do.
Do	A 47 P Y 6	.798	.50	36,380	40.0	31.6	Light and dark yellow.
Do	A 50 P Y 6	.798	.50	27,200	21.5	20.8	Light and dark yellow, with streaks of golden yellow.
Do	A 56 P Y 6	.798	.50	36,800	45.0	35.6	Light and dark yellow.
Do	A 43 P Y 6	.798	.50	37,560	44.0	41.6	Light and dark yellow metal intermingled.
Do	A 48 P Y 6	.798	.50	28,980	25.5	23.0	Dark yellow, with streaks of golden yellow.
Do	A 51 P Y 6	.798	.50	26,400	29.5	25.2	Light and dark yellow, 60 per cent; brown color, 40 per cent.
Do	A 53 P Y 6	.798	.50	24,760	27.0	18.6	Brown and dark yellow.
Do	A 54 P Y 6	.798	.50	35,980	41.0	33.6	Light and dark yellow metal intermingled.
Do	A 55 P Y 6	.798	.50	28,400	29.0	20.8	Dark and light yellow, brown spot at circumference.
Do	A 59 P Y 6	.798	.50	37,240	55.5	39.6	Uniform light yellow.
Do	A 61 P Y 6	.798	.50	34,600	42.0	35.6	Do.
Do	A 62 P Y 6	.798	.50	28,560	31.5	29.4	Light and dark yellow, seam near circumference.
Do	A 53 P Y 6	.798	.50	22,400	16.5	11.6	Copper color and light yellow, serrated surface.
Do	A 52 P Y 6	.564	.25	32,400	35.5	27.6	Dark yellow, with streaks of dark-brown metal.
Do	A 65 P Y 6	.798	.50	37,040	52.0	39.6	Uniform light yellow.
Do	A 66 P Y 6	.798	.50	30,800	33.5	31.6	Light yellow, with dark-brown center.
Recoil sleeve	A 14 R S 6	.564	.25	44,880	27.7	21.6	Light lavender color.
Do	A 15 R S 6	.564	.25	39,640	18.7	21.6	Yellow, with band of lavender-colored metal.
Do	A 16 R S 6	.798	.50	30,960	5.5	9.2	Light yellow, with zone of lavender-colored metal.
Do	A 17 R S 6	.798	.50	31,880	5.5	9.2	Brownish lavender colored.
Do	A 18 R S 6	.798	.50	28,720	3.5	4.4	Do.
Do	A 19 R S 6	.564	.25	32,440	5.0	11.6	Do.
Do	A 20 R S 6	.798	.50	29,360	3.5	4.4	Do.
Do	A 22 R S 6	.798	.50	38,200	6.5	9.2	Uniform light yellow.
Do	A 21 R S 6	.798	.50	31,600	5.5	9.2	Brownish yellow, with lavender streak across middle.

BRONZE GUN-CARRIAGE METAL—Continued.

6-POUNDER GUN MOUNTS—Continued.

Description.	Marks.	Diameter.	Sectional area.	Tensile strength per square inch.	Elongation in 2 inches.	Contraction of area.	Fracture.
		Inch.	*Sq. inch.*	*Pounds.*	*Per cent.*	*Per cent.*	
Recoil sleeve	A 26 R S 6	.798	.50	22,200	6.0	9.2	Golden yellow.
Do	A 31 R S 6	.798	.50	20,400	6.5	4.4	Variegated dark copper and light yellow colored metal.
Do	A 34 R S 6	.798	.50	19,960	3.5	4.4	Copper-colored and light-yellow metal intermingled.
Do	A 37 R S 6	.798	.50	15,700	4.5	6.8	Variegated dark copper and light yellow colored metal.
Do	A 23 R S 6	.798	.50	12,900	3.5	4.4	Dark copper colored, spongy.
Do	A 24 R S 6	.798	.50	16,820	3.0	4.4	Variegated dark yellow and copper colored, spongy.
Do	A 38 R S 6	.798	.50	31,400	24.0	23.0	Light yellow, with darker yellow metal at one side.
Do	A 39 R S 6	.798	.50	29,200	19.5	23.0	Light yellow, 80 per cent; dark brown, spongy, 20 per cent.
Do	A 40 R S 6	.798	.50	30,600	23.0	23.0	Uniform light yellow. Vesicular surface.
Do	A 41 R S 6	.798	.50	32,640	24.5	23.0	Light yellow, dark-yellow metal on one side.
Do	A 42 R S 6	.798	.50	27,200	16.0	20.8	Light yellow, dark-brown spot at circumference.
Do	A 43 R S 6	.798	.50	31,960	25.0	23.0	Light yellow, dark-brown spot at circumference. Vesicular surface.
Do	A 44 R S 6	.798	.40	32,800	31.0	29.4	Uniform light yellow.
Do	A 53 R S 6	.798	.50	26,600	16.5	16.4	Light yellow, dark brown, and copper-colored metal intermingled.
Do	A 45 R S 6	.798	.50	29,600	18.5	18.6	Light yellow and golden-yellow metal intermingled.
Do	A 46 R S 6	.798	.50	29,040	22.5	20.8	Light yellow, with spots of dark-brown metal.
Do	A 47 R S 6	.798	.50	28,760	22.0	20.8	Light yellow, tinged with darker yellow metal.
Do	A 49 R S 6	.798	.50	33,140	28.5	20.8	Light yellow, with spots of dark-yellow metal.
Do	A 50 R S 6	.798	.50	23,800	14.5	14.0	Light yellow, tinged with darker yellow metal.

Do.	A 52 R S 6	.798	.50	28,800	22.0	20.8	Light yellow and greenish-brown metal.
Do.	A 53 R S 6	.798	.50	31,200	27.0	20.8	Light yellow, with patches of dark yellow.
Do.	A 55 R S 6	.798	.50	30,300	25.0	23.0	Do.
Do.	A 48 R S 6	.798	.50	31,660	25.5	23.0	Light yellow, with spots of dark brown and dark-yellow metal.
Do.	A 51 R S 6	.798	.50	34,600	27.0	23.0	Yellow metal, with a dark-brown spot.
Do.	A 54 R S 6	.798	.50	31,000	27.5	23.0	Uniform light yellow.
Do.	A 56 R S 6	.798	.50	24,200	15.0	18.6	Patches of light yellow, dark yellow, and brown metal.
Do.	A 57 R S 6	.798	.50	24,320	17.5	16.4	Dark brown at center, light yellow at circumference.
Do.	A 58 R S 6	.798	.50	22,500	13.0	14.0	Dark brown, with yellow metal in part. Vesicular surface.
Do.	A 59 R S 6	.798	.50	26,040	18.0	16.4	Light and dark yellow intermingled.
Do.	A 60 R S 6	.798	.50	27,440	17.0	16.4	Yellow, dark brown, and greenish metal in patches.
Do.	A 61 R S 6	.798	.50	26,800	17.0	20.8	Light yellow and dark yellow.
Do.	A 62 R S 6	.798	.50	27,340	19.0	16.4	Varying shades of yellow and brown.
Do.	A 63 R S 6	.798	.50	25,340	17.0	16.4	Light yellow, with patches of dark-yellow metal.
Do.	A 64 R S 6	.798	.50	30,720	24.0	23.0	Light yellow, with dark-brown spot at circumference.
Do.	A 65 R S 6	.798	.50	27,760	17.0	14.0	Light yellow, 60 per cent; dark brown, 40 per cent.
Do.	A 66 R S 6	.798	.50	23,000	15.0	14.0	Dark yellow and brown metal.
Do.	A 67 R S 6	.798	.50	26,280	20.0	20.8	Light yellow, golden yellow, and brown metal, in patches.
Do.	A 68 R S 6	.798	.50	31,240	24.5	20.8	Light yellow and golden-yellow metal.
Do.	A 69 R S 6	.798	.50	27,100	20.0	16.4	Do.
Do.	A 50 2 R S 6	.798	.50	25,000	17.5	11.6	Light and dark yellow, with patches of golden-yellow.
Do.	A 56 2 R S 6	.798	.50	22,980	13.5	11.6	Light and golden yellow, with patches of brown.
Do.	A 57 2 R S 6	.798	.50	29,400	24.0	18.6	Light and golden yellow metal.
Do.	A 58 2 R S 6	.798	.50	22,380	13.0	11.6	Light and dark yellow.
Do.	A 66 2 R S 6	.798	.50	20,400	13.0	9.2	Light and dark yellow and brown color.
Do.	A 70 R S 6	.798	.50	20,000	12.0	14.0	Light and dark yellow, with patch of brown-colored metal.

BRONZE GUN-CARRIAGE METAL—Continued.

6-POUNDER GUN MOUNTS—Continued.

Description.	Marks.	Diameter.	Sectional area.	Tensile strength per square inch.	Elongation in 2 inches.	Contraction of area.	Fracture.
		Inch.	*Sq. inch.*	*Pounds.*	*Per cent.*	*Per cent.*	
Recoil sleeve	A 72 R S 6	.798	.50	18,800	10.5	9.2	Light and dark yellow. Vesicular surface.
Do.	A 74 R S 6	.798	.50	21,180	13.5	11.6	Light and dark yellow, with patch of brown-colored metal.
Do.	A 71 R S 6	.798	.50	28,000	22.0	23.0	Light and dark yellow.
Do.	A 73 R S 6	.798	.50	30,160	24.0	23.0	Do.
Do.	A 77 R S 6	.798	.50	26,840	19.5	20.8	Do.
Do.	A 75 R S 6	.798	.50	22,200	13.5	16.4	Golden yellow; small patches of lavender-colored metal.
Do.	A 78 R S 6	.798	.50	19,560	13.5	11.6	Light and dark yellow. Vesicular surface.
Do.	A 79 R S 6	.798	.50	17,000	6.5	9.2	Golden yellow; patches of light yellow. Vesicular surface.
Do.	A 80 R S 6	.798	.50	18,200	8.5	6.8	Golden yellow. Vesicular surface.
Do.	A 81 R S 6	.798	.50	16,960	1.5	4.4	Do.
Do.	A 79 2 R S 6	.798	.50	19,880	10.0	9.2	Dark brown; yellow streaks. Vesicular surface,
Do.	A 80 2 R S 6	.798	.50	16,640	5.5	6.8	Copper color and light yellow. Vesicular surface.
Do.	A 76 R S 6	.798	.50	28,780	22.5	20.8	Golden yellow. Vesicular surface.
Oscillating slide	A 9 O S 6	.564	.25	42,000	27.0	24.4	Yellow and lavender color.
Do.	A 11 O S 6	.798	.50	44,360	22.5	20.8	Light yellow, with zone of lavender-colored metal.
Do.	A 10 O S 6	.798	.50	52,680	59.0	48.4	Uniform light yellow.
Do.	A 18 O S 6	.798	.50	47,600	46.0	37.6	Do.
Do.	A 12 O S 6	.798	.50	49,020	52.0	39.6	Do.
Do.	A 14 O S 3	.798	.50	12,600	4.0	2.0	Light yellow; spongy.

Do........................	A 15 O S 6	.798	.50	12,120	3.0	2.0	Dark brown; spongy.
Do........................	A 16 O S 6	.798	.50	29,940	15.5	14.0	Light yellow and lavender intermingled.
Do........................	A 17 O S 6	.798	.50	27,200	13.0	11.6	Light yellow, lavender, and golden yellow intermingled.
Do........................	A 18 O S 6	.798	.50	37,040	31.5	27.4	Uniform light yellow.
Do........................	A 19 O S 6	.798	.50	28,560	22.0	16.4	Dark yellow and brown-colored metal intermingled.
Do........................	A 20 O S 6	.798	.50	29,380	23.5	20.8	Dark brown, dark yellow, and golden yellow.
Do........................	A 21 O S 6	.798	.50	32,600	28.5	23.0	Golden yellow, with darker yellow spots.
Do........................	A 22 O S 6	.798	.50	25,920	18.0	14.0	Lavender color, interspersed with dark-brown spots.
Do........................	A 23 O S 6	.798	.50	21,820	12.5	14.0	Different shades of light and golden yellow.
Do........................	A 24 O S 6	.798	.50	28,200	13.0	14.0	Light yellow and lavender-colored metal intermingled.
Do........................	A 25 O S 6	.798	.50	32,440	24.0	23.0	Light yellow; darker metal on one side.
Do........................	A 26 O S 6	.798	.50	31,620	27.0	23.0	Golden yellow; dark spot at circumference.
Do........................	A 27 O S 6	.798	.50	29,940	26.0	23.0	Light yellow; with dark-brown center.
Do........................	A 28 O S 6	.798	.50	27,440	21.0	18.6	Yellow, with irregular streaks of dark-brown metal.
Do........................	A 29 O S 6	.798	.50	26,420	16.5	18.6	Light brown and dark-blue metal intermingled; spongy.
Do........................	A 30 O S 6	.798	.50	31,200	26.0	23.0	Light yellow, with darker metal on one side.
Do........................	A 31 O S 6	.798	.50	29,240	25.0	20.8	Light and dark yellow metal intermingled.
Do........................	A 32 O S 6	.798	.50	31,960	24.0	18.6	Variegated dark yellow and copper-colored metal.
Do........................	A 33 O S 6	.798	.50	26,640	15.0	14.0	Variegated copper and lavender-colored metal.
Do........................	A 34 O S 6	.798	.50	28,800	19.0	18.6	Dark yellow and copper-colored metal intermingled.
Do........................	A 35 O S 6	.798	.50	30,400	23.0	20.8	Dark yellow and light yellow metal intermingled.
Do........................	A 36 O S 6	.798	.50	29,800	24.0	18.6	Do.
Do........................	A 37 O S 6	.798	.50	28,560	21.5	16.4	Brown and light-yellow metal intermingled.
Do........................	A 38 O S 6	.798	.50	25,580	21.0	18.6	Light yellow, with streaks of darker-colored metal. **Laminated.**
Do........................	A 22 2 O S 6	.798	.50	18,040	11.5	6.8	Dark brown and copper-colored metal intermingled.
Do........................	A 23 2 O S 6	.798	.50	20,100	13.0	9.2	Dark brown.

BRONZE GUN-CARRIAGE METAL—Continued.

6-POUNDER GUN MOUNTS—Continued.

Description.	Marks.	Diameter.	Sectional area.	Tensile strength per square inch.	Elongation in 2 inches.	Contraction of area.	Fracture.
		Inch.	*Sq. inch.*	*Pounds.*	*Per cent.*	*Per cent.*	
Oscillating slide	A 39 O S 6	.798	.50	31,940	32.5	29.4	Light yellow
Do	A 40 O S 6	.798	.50	28,820	25.0	20.8	Light yellow, dark brown, and copper-colored metal intermingled.
Do	A 41 O S 6	.798	.50	29,000	21.5	18.6	Uniform light golden yellow color.
Do	A 42 O S 6	.798	.50	29,540	25.0	18.6	Light and golden yellow metal intermingled.
Do	A 43 O S 6	.798	.50	28,060	21.0	23.0	Light yellow, with spot of darker yellow at circumference.
Do	A 44 O S 6	.798	.50	30,620	26.5	20.8	Light and dark yellow metal intermingled.
Do	A 45 O S 6	.798	.50	27,040	25.0	20.8	Light yellow, with streaks of dark yellow metal.
Do	A 46 O S 6	.798	.50	33,000	29.5	23.0	Uniform light yellow.
Do	A 47 O S 6	.798	.50	59,000	40.0	37.6	Uniform light yellow, silvery luster.
Do	A 57 O S 6	.798	.50	21,580	14.0	14.0	Dark yellow and dark-brown color.
Do	A 58 O S 6	.798	.50	19,980	13.5	14.0	Dark yellow and light-brown spongy metal.
Do	A 59 O S 6	.798	.50	22,360	15.0	16.4	Light brown, with patches of dark yellow.
Do	A 60 O S 6	.798	.50	27,180	21.5	18.6	Dark yellow and golden yellow.
Do	A 52 1 O S 6	.798	.50	49,980	53.5	37.6	Uniform light yellow.
Do	A 52 2 O S 6	.798	.50	22,800	8.5	9.2	Dark yellow and lavender, dark brown at circumference.
Do	A 61 O S 6	.798	.50	57,960	25.0	25.2	Uniform dark-brownish green.
Do	A 62 O S 6	.798	.50	63,800	46.5	43.4	Uniform light-brownish green.
Do	A 63 O S 6	.798	.50	66,040	37.5	35.6	Do.
Do	A 64 O S 6	.798	.50	25,000	17.5	18.6	Light yellow; streaks of golden yellow.

Do.	A 65 O S 6	.798	.50	26,380	19.0	16.4	Do.
Do.	A 66 O S 6	.798	.50	24,000	19.0	16.4	Light yellow and golden yellow.
Do.	A 67 O S 6	.798	.50	20,400	13.5	11.6	Dark brown: patches of light yellow.
Do.	A 68 O S 6	.798	.50	27,560	26.0	23.0	Light and dark yellow.
Do.	A 58 2 O S 6	.798	.50	23,920	20.0	16.4	Variegated dark-brown and yellow color.
Do.	A 59 2 O S 6	.798	.50	23,600	17.0	14.0	Do.
Do.	A 67 2 O S 6	.798	.50	21,440	15.5	14.0	Yellow metal, with dark-brown flaky sections.
Guide sleeve	1	.798	.50	41,400	14.5	16.4	Yellow and lavender-colored metal interspersed.
Do.	2	.798	.50	18,800	4.5	9.2	Yellow and lavender-colored metal interspersed. Dark spongy spot.
Recoil cylinder	R C 4	.798	.50	28,620	21.5	18.6	Golden yellow; copper-colored spot at circumference.
Do.	R C 5	.798	.50	30,440	22.5	20.8	Golden yellow.
Do.	R C 6	.798	.50	21,600	11.0	9.2	Variegated shades of light and golden yellow metal. Opened cracks along surface of stem.
Do.	R C 7	.798	.50	26,820	21.0	18.6	Uniform dark-yellow color.
Do.	R C 8	.798	.50	28,240	19.5	18.6	Uniform yellowish lavender color.
Do.	R C 9	.798	.50	23,920	15.0	11.6	Variegated shades of yellow.
Do.	R C 10	.798	.50	27,500	21.0	18.6	Uniform yellow color.
Trail spade	T S 3	.564	.25	34,720	5.0	8.4	Lavender and yellow-colored metal intermingled.
Cradle	1	.798	.50	25,580	6.5	9.2	Light lavender; streaks of yellow metal.
15-POUNDER GUN MOUNTS.							
Pivot yoke	A 9 P Y 15	.798	.50	42,460	26.5	27.4	Uniform golden-yellow color.
Do.	A 10 P Y 15	.798	.50	46,720	35.0	31.6	Do.
Do.	A 11 P Y 15	.798	.50	40,020	25.0	27.4	Do.
Do.	A 12 P Y 15	.798	.50	29,820	11.5	28.0	Do.
Do.	A 13 P Y 15	.798	.50	43,640	31.0	Fractured in neck.	Do.
Do.	A 14 P Y 15	.798	.50	48,920	36.5	25.2	Light yellow, with lavender-colored metal interspersed.
Do.	A 15 P Y 15	.564	.25	47,880	52.0	42.0	Uniform light yellow.
Do.	A 16 P Y 15	.798	.50	52,160	62.0	47.2	Do.
Recoil sleeve	A 8 R S 15	.564	.25	43,880	31.7	24.4	Uniform golden-yellow color.

BRONZE GUN-CARRIAGE METAL—Continued.

15-POUNDER GUN MOUNTS—Continued.

Description.	Marks.	Diameter.	Sectional area.	Tensile strength per square inch.	Elongation in 2 inches.	Contraction of area.	Fracture.
		Inch.	*Sq. inch.*	*Pounds.*	*Per cent.*	*Per cent.*	
Recoil sleeve	A 9 R S 15	.564	.25	37,280	15.0	18.4	Lavender and yellow-colored metal intermingled.
Do.	A 10 R S 15	.798	.50	31,420	6.5	6.8	Dark-brown color.
Do.	A 11 R S 15	.798	.50	42,060	28.5	28.0	Dark yellow; streak of lavender-colored metal.
Do.	A 12 R S 15	.564	.25	34,240	8.0	15.2	Brownish lavender color.
Do.	A 13 R S 15	.798	.50	31,200	5.0	6.8	Dark-brown color.
Do.	A 14 R S 15	.798	.50	34,420	6.5	6.8	Brownish lavender color.
Do.	A 15 R S 15	.798	.50	34,240	5.0	6.8	Do.
Do.	A 16 R S 15	.798	.50	31,840	4.0	4.4	Do.
Do.	A 17 R S 15	.798	.50	31,240	5.0	9.2	Do.
Do.	A 18 R S 15	.798	.50	39,200	14.5	16.4	Light-yellow color.
Do.	A 19 R S 15	.798	.50	28,040	6.0	9.2	Brownish lavender color.
Do.	A 20 R S 15	.798	.50	33,020	5.0	9.2	Light-lavender color.
Do.	A 21 R S 15	.798	.50	33,840	5.5	6.8	Light-yellow, with streak of lavender-colored metal.
Do.	A 22 R S 15	.798	.50	37,600	8.5	11.6	Uniform light yellow.
Do.	A 23 R S 15	.798	.50	31,220	14.0	16.4	Lavender color.
Do.	A 25 R S 15	.798	.50	23,980	15.0	11.6	Light yellow, with strata of dark brown metal.
Do.	A 26 R S 15	.798	.50	25,200	18.0	16.4	Brown and dark-yellow metal.
Do.	A 27 R S 15	.798	.50	33,960	31.5	27.4	Dark yellow, 60 per cent; light brown, 40 per cent.
Do.	A 30 R S 15	.798	.50	32,000	29.5	25.2	Dark and light yellow metal.

Do.	A 24 R S 15	.798	.50	22,800	15.0	14.0	Light-yellow and brown metal intermingled.
Do.	A 28 R S 15	.798	.50	35,680	30.0	23.0	Uniform light yellow.
Do.	A 29 R S 15	.798	.50	33,040	27.5	20.8	Do.
Do.	A 25 2 R S 15	.798	.50	21,180	12.5	14.0	Dark-brown and light-yellow metal intermingled.
Do.	A 34 R S 15	.798	.50	45,960	50.0	37.6	Uniform light yellow.
Do.	A 35 R S 15	.798	.50	43,600	40.0	33.6	Do.
Do.	A 24 2 R S 15	.564	.25	25,040	21.0	18.4	Golden and light yellow; brown color at circumference.
Do.	A 36 R S 15	.798	.50	29,200	23.0	20.8	Light and dark yellow. Vesicular surface.
Do.	A 38 R S 15	.798	.50	28,560	22.0	18.6	Light and dark yellow with patch of golden yellow.
Do.	A 39 R S 15	.798	.50	26,940	18.0	18.6	Light and dark yellow. Vesicular surface.
Do.	A 40 R S 15	.798	.50	29,180	26.0	20.8	Do.
Do.	A 47 R S 15	.798	.50	24,980	15.5	18.6	Do.
Do.	A 50 R S 15	.798	.50	25,600	16.0	18.6	Light and golden yellow. Vesicular surface.
Do.	A 41 R S 15	.798	.50	26,200	21.5	16.4	Light and dark yellow; dark spot at circumference.
Do.	A 42 R S 15	.798	.50	25,200	18.5	14.0	Light and dark yellow; golden yellow at circumference.
Do.	A 43 R S 15	.798	.50	29,560	24.5	23.0	Light and dark yellow.
Do.	A 44 R S 15	.798	.50	30,400	26.5	20.8	Light and dark yellow. Vesicular surface.
Do.	A 45 R S 15	.798	.50	32,780	26.5	25.2	Light and dark yellow.
Do.	A 48 R S 15	.798	.50	24,160	14.0	14.0	Light and dark yellow. Vesicular surface.
Do.	A 49 R S 15	.798	.50	31,780	28.0	25.2	Do.
Do.	A 37 R S 15	.798	.50	32,200	29.0	27.4	Light yellow, 40 per cent; dark yellow, 60 per cent.
Do.	A 53 R S 15	.798	.50	34,360	30.5	27.4	Light and dark yellow.
Do.	A 51 R S 15	.798	.50	65,780	32.0	29.4	Uniform brownish green.
Do.	A 54 R S 15	.798	.50	55,400	25.0	27.4	Brownish green; dark spot at circumference.
Do.	A 57 R S 15	.798	.50	41,240	11.5	16.4	Dark brownish green; dark spot at circumference.
Do.	A 58 R S 15	.798	.50	61,600	32.0	33.6	Uniform brownish green.

BRONZE GUN-CARRIAGE METAL—Continued.

15-POUNDER GUN MOUNTS—Continued.

Description.	Marks.	Diameter.	Sectional area.	Tensile strength per square inch.	Elongation in 2 inches.	Contraction of area.	Fracture.
		Inch.	*Sq. inch.*	*Pounds.*	*Per cent.*	*Per cent.*	
Recoil sleeve	A 60 R S 15	.798	.50	50,320	16.5	20.8	Lavender and lemon color.
Do	A 62 R S 15	.798	.50	26,640	1.5	....	Broke in head. Dark brown, spongy. Spongy along the stem.
Do	A 63 R S 15	.798	.50	29,480	2.5	....	Do.
Do	A 64 R S 15	.798	.50	56,200	20.5	25.2	Light lemon-yellow color.
Do	A 65 R S 15	.798	.50	64,500	32.0	29.4	Do.
Do	A 66 R S 15	.798	.50	23,600	1.0	....	Broke in the neck. Dark greenish brown, spongy.
Do	A 68 R S 15	.798	.50	54,400	22.0	23.0	Light-yellow and lavender color.
Do	A 67 R S 15	.564	.25	48,480	9.5	15.2	Light lemon yellow; dark-brown spot at circumference.
Do	A 59 R S 15	.798	.50	53,600	20.0	23.0	Uniform brownish green.
Do	A 62 2 R S 15	.564	.25	35,120	9.5	11.6	Lemon yellow and lavender.
Do	A 63 2 R S 15	.564	.25	31,960	3.5	....	Broke in the neck. Greenish brown and dark yellow.
Do	A 66 2 R S 15	.798	.50	54,400	28.0	31.6	Uniform light brownish green.
Do	A 61 R S 15	.798	.50	59,600	32.5	25.2	Uniform light lemon yellow.
Oscillating slide	A 4 O S 15	.798	.50	36,440	13.5	11.6	Brownish yellow and lavender color.
Do	A 7 O S 15	.798	.50	39,240	16.5	18.6	Do.
Do	A 8 O S 15	.798	.50	40,040	11.5	11.6	Lavender color, with zone of yellow-colored metal.
Do	A 9 O S 15	.798	.50	50,400	43.0	35.6	Uniform light yellow.
Do	A 11 O S 15	.798	.50	48,200	50.5	39.6	Do.
Do	A 12 O S 15	.798	.50	32,060	28.5	23.0	Light yellow, with patches of dark yellow.

Do.	A 15 O S 15	.798	.50	36,760	41.5	33.6	Do.
Do.	A 16 O S 15	.798	.50	35,000	30.5	25.2	Light yellow, dark-yellow metal on one side.
Do.	A 13 O S 15	.798	.50	33,600	26.0	23.0	Light yellow, golden-yellow and brown metal in patches.
Do.	A 14 O S 15	.798	.50	28,560	24.0	20.8	Brown and light yellow intermingled.
Do.	A 24 O S 15	.798	.50	22,200	17.0	14.0	Fractured along different oblique planes. Dark-brown vesicular surfaces. Opened cracks along stem.
Do.	A 26 O S 15	.798	.50	30,580	27.0	18.6	Light and dark yellow, and dark-brown metal.
Do.	A 27 O S 15	.798	.50	27,760	18.5	16.4	Light and dark yellow, with patches of brown-colored metal.
Do.	A 28 O S 15	.798	.50	29,800	26.5	23.0	Dark yellow, 80 per cent; light yellow, 20 per cent.
Do.	A 29 O S 15	.798	.50	24,960	19.0	18.6	Dark yellow and brown color.
Do.	A 30 O S 15	.798	.50	33,400	31.5	31.6	Light and dark yellow metal intermingled.
Do.	A 31 O S 15	.798	.50	31,780	27.5	27.4	Do.
Do.	A 32 O S 15	.798	.50	28,000	28.0	20.8	Golden yellow, with patches of dark yellow.
Do.	A 24 2 O S 15	.798	.50	27,580	26.0	20.8	Light yellow and golden yellow, with streaks of brown.
Do.	A 34 O S 15	.798	.50	31,640	30.0	25.2	Light and dark yellow and brown colored metal.
Do.	A 23 1 O S 15	.798	.50	47,820	39.5	33.6	Uniform light yellow.
Do.	A 23 2 O S 15	.798	.50	23,960	8.0	6.8	Light-yellow and lavender color.
Do.	A 33 O S 15	.798	.50	29,580	30.0	25.2	Light and dark yellow.
Do.	A 35 O S 15	.798	.50	27,000	18.5	16.4	Light yellow, streaks of dark yellow.
Do.	A 36 O S 15	.798	.50	34,160	40.5	31.6	Light and dark yellow intermingled.
Do.	A 40 O S 15	.798	.50	33,040	32.5	27.4	Do.
Do.	A 37 O S 15	.798	.50	29,780	31.0	27.4	Light and dark yellow. Seam from circumference to center.
Do.	A 39 O S 15	.798	.50	21,240	16.5	16.4	Light yellow, streaks of brown, and golden yellow.
Do.	A 43 O S 15	.798	.50	25,560	21.0	20.8	Light and dark yellow, patches of brown,
Do.	A 44 O S 15	.798	.50	27,680	22.0	18.6	Dark yellow and lavender intermingled.
Do.	A 45 O S 15	.798	.50	29,800	25.0	25.2	Light yellow, patches of golden yellow
Do.	A 47 O S 15	.798	.50	56,780	26.5	27.4	Uniform brownish green.

BRONZE GUN-CARRIAGE METAL.—Continued.

15-POUNDER GUN MOUNTS—Continued.

Description.	Marks.	Diameter.	Sectional area.	Tensile strength per square inch.	Elongation in 2 inches.	Contraction of area.	Fracture.
		Inch.	*Sq. inch.*	*Pounds.*	*Per cent.*	*Per cent.*	
Oscillating slide	A 38 O S 15	.798	.50	33,580	36.0	33.6	Light and dark yellow.
Do.	A 41 O S 15	.798	.50	27,440	26.5	27.4	Light and dark yellow, streaks of brown.
Do.	A 48 O S 15	.798	.50	57,980	28.0	27.4	Light brownish green.
Do.	A 49 O S 15	.798	.50	54,000	30.5	29.4	Light yellow and light lavender.
Do.	A 50 O S 15	.798	.50	55,960	31.5	31.6	Light brownish green.
Do.	A 51 O S 15	.798	.50	57,800	35.5	33.6	Uniform light brownish green.
Do.	A 39 2 O S 15	.798	.50	25,300	22.5	18.6	Copper color and light yellow. Serrated surface.
Do.	A 52 O S 15	.798	.50	50,720	49.5	41.6	Uniform light lemon yellow.
Do.	A 53 O S 15	.798	.50	27,800	25.5	20.8	Light and dark yellow.
Do.	A 54 O S 15	.798	.50	38,700	20.0	23.0	Light lemon yellow, dark-colored spongy spot.
Do.	A 55 O S 15	.798	.50	59,200	28.0	25.2	Uniform light lemon color.
Do.	A 57 O S 15	.798	.50	58,800	26.0	27.4	Do.
Do.	A 61 O S 15	.798	.50	58,800	35.5	29.4	Do.
Do.	A 43 2 O S 15	.798	.50	30,580	30.0	25.2	Light yellow, streaks of golden yellow.
Do.	A 56 O S 15	.798	.50	52,200	51.5	41.6	Uniform light lemon yellow.
Do.	A 58 O S 15	.798	.50	35,960	12.5	18.6	Lavender, patches of lemon yellow.
Do.	A 59 O S 15	.798	.50	32,600	9.5	9.2	Lavender and lemon yellow. Large dark spot at the circumference.
Do.	A 60 O S 15	.798	.50	39,180	12.0	14.0	Lavender and lemon yellow.
Do.	A 46 2 O S 15	.798	.50	26,440	21.0	16.4	Brown and dark yellow.

BRASS CYLINDERS FOR PRESSURE GAUGES.

Mean compression of 10 cylinders made in France.
Table for use with pressure gauge one-tenth square inch area.

Inch. .4333	*Inch.* .4104	*Inch.* .4190	Lengths Diameters	*Inch.* .4490 .2522	*Inch.* .4992 .2522	*Inch.* .4982 .2524	*Inch.* .4989 .2521	*Inch.* .5000 .2518	*Inch.* .4992 .2522	*Inch.* .4995 .2522	*Inch.* .4991 .2522	*Inch.* .4997 .2543	*Inch.* .4994 .2524	*Inch.* .4992 .2524	
Compression of cylinders that have been initially compressed under loads of—			Load per square inch on pressure gauge one-tenth square inch area.	Total compressions.											Sets.
24,000	28,000	32,000		1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	Mean.	
Inch.	*Inch.*	*Inch.*	*Pounds.*	*Inch.*	*Inch.*	*Inch.*	*Inch.*	*Inch.*	*Inch.*	*Inch.*	*Inch.*	*Inch.*	*Inch.*	*Inch.*	*Inch.*
			3,000	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
			6,000	.0001	.0004	.0003	.0004	.0004	.0009	.0003	.0004	.0009	.0008	.0004	.0002
			9,000	.0063	.0030	.0010	.0012	.0027	.0114	.0014	.0008	.0035	.0009	.0032	.0027
			10,000	.0095	.0065	.0020	.0029	.0062	.0154	.0036	.0010	.0065	.0011	.0055	.0049
			11,000	.0135	.0095	.0060	.0069	.0098	.0196	.0072	.0011	.0100	.0015	.0085	.0079
			12,000	.0175	.0130	.0094	.0102	.0130	.0243	.0105	.0015	.0136	.0023	.0115	.0108
			13,000	.0220	.0170	.0125	.0138	.0169	.0295	.0141	.0030	.0180	.0058	.0153	.0145
			14,000	.0263	.0213	.0165	.0176	.0211	.0345	.0172	.0059	.0220	.0081	.0190	.0181
			15,000	.0312	.0260	.0205	.0219	.0251	.0392	.0216	.0085	.0265	.0115	.0232	.0222
			16,000	.0359	.0300	.0245	.0253	.0296	.0445	.0258	.0120	.0312	.0153	.0274	.0263
			17,000	.0403	.0340	.0288	.0300	.0340	.0487	.0302	.0151	.0358	.0187	.0316	.0305
			18,000	.0450	.0389	.0329	.0344	.0386	.0533	.0345	.0190	.0400	.0225	.0359	.0348
			19,000	.0493	.0430	.0373	.0382	.0429	.0584	.0395	.0221	.0444	.0266	.0402	.0391
0.	0.	0.	20,000	.0530	.0469	.0414	.0426	.0472	.0621	.0410	.0266	.0485	.0306	.0440	.0429
.0002	.0001	.0002	21,000	.0580	.0518	.0455	.0468	.0515	.0670	.0471	.0305	.0524	.0340	.0485	.0474
.0005	.0002	.0003	22,000	.0621	.0550	.0498	.0510	.0555	.0705	.0508	.0335	.0568	.0384	.0523	.0512
.0007	.0003	.0004	23,000	.0664	.0597	.0537	.0550	.0597	.0746	.0550	.0378	.0612	.0420	.0565	.0554
.0010	.0004	.0005	24,000	.0702	.0640	.0574	.0589	.0637	.0784	.0584	.0417	.0648	.0460	.0603	.0591
.0025	.0005	.0006	25,000	.0744	.0675	.0614	.0630	.0677	.0829	.0618	.0471	.0690	.0513	.0646	.0634
.0080	.0007	.0007	26,000	.0787	.0720	.0657	.0664	.0714	.0860	.0668	.0490	.0720	.0530	.0681	.0669
.0110	.0009	.0008	27,000	.0818	.0744	.0691	.0713	.0754	.0900	.0698	.0540	.0769	.0589	.0722	.0710
.0152	.0014	.0009	28,000	.0855	.0784	.0730	.0738	.0791	.0924	.0740	.0564	.0786	.0615	.0758	.0741
.0188	.0053	.0010	29,000	.0894	.0820	.0767	.0788	.0830	.0969	.0768	.0621	.0839	.0653	.0795	.0788
.0230	.0083	.0012	30,000	.0932	.0860	.0804	.0813	.0862	.1005	.0805	.0640	.0870	.0681	.0827	.0814
.0260	.0117	.0015	31,000	.0959	.0892	.0826	.0854	.0903	.1036	.0843	.0689	.0915	.0724	.0864	.0851
.0295	.0150	.0018	32,000	.0994	.0930	.0873	.0884	.0930	.1070	.0874	.0710	.0922	.0755	.0894	.0881
.0328	.0184	.0028	33,000	.1030	.0955	.0905	.0921	.0969	.1103	.0894	.0743	.0977	.0795	.0929	.0916
.0354	.0215	.0080	34,000	.1058	.0989	.0940	.0955	.1010	.1135	.0955	.0789	.1004	.0824	.0966	.0953
.0392	.0245	.0114	35,000	.1100	.1026	.0970	.0989	.1031	.1168	.0970	.0825	.1045	.0863	.0999	.0985
.0429	.0280	.0148	36,000	.1134	.1059	.1004	.1025	.1078	.1195	.1016	.0834	.1078	.0898	.1032	.1018
.0454	.0314	.0179	37,000	.1160	.1095	.1039	.1051	.1098	.1230	.1035	.0899	.1111	.0929	.1065	.1051
.0489	.0345	.0216	38,000	.1208	.1124	.1068	.1085	.1144	.1260	.1080	.0917	.1131	.0963	.1098	.1084

Compression of cylinders that have been initially compressed under loads of—			Load per square inch on pressure gauge one-tenth square inch area.	Total compressions.											Sets.
24,000	28,000	32,000		1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	Mean.	
Inch.	*Inch.*	*Inch.*	*Pounds.*	*Inch.*	*Inch.*	*Inch.*	*Inch.*	*Inch.*	*Inch.*	*Inch.*	*Inch.*	*Inch.*	*Inch.*	*Inch.*	*Inch.*
.0520	.0374	.0289	39,000	.1215	.1154	.1105	.1128	.1166	.1295	.1102	.0965	.1178	.0981	.1129	.1115
.0553	.0409	.0283	40,000	.1243	.1189	.1129	.1155	.1204	.1319	.1145	.0985	.1193	.1029	.1159	.1145
....	....	....	41,000	.1275	.1214	.1170	.1188	.1232	.1360	.1166	.1025	.1240	.1054	.1192	.1178
....	....	....	42,000	.1324	.1252	.1191	.1218	.1270	.1378	.1204	.1050	.1261	.1090	.1224	.1210
....	....	....	43,000	.1345	.1279	.1235	.1250	.1287	.1415	.1225	.1084	.1305	.1120	.1254	.1240
....	....	....	44,000	.1381	.1310	.1252	.1280	.1336	.1442	.1265	.1118	.1319	.1153	.1286	.1272
....	....	....	45,000	.1404	.1345	.1292	.1314	.1352	.1466	.1296	.1154	.1360	.1180	.1316	.1302
....	....	....	46,000	.1441	.1376	.1315	.1340	.1391	.1498	.1320	.1170	.1383	.1216	.1345	.1331
....	....	....	47,000	.1460	.1403	.1345	.1379	.1416	.1530	.1348	.1210	.1420	.1243	.1375	.1361
....	....	....	48,000	.1500	.1432	.1390	.1400	.1455	.1553	.1380	.1235	.1445	.1273	.1406	.1392
....	....	....	49,000	.1518	.1460	.1402	.1439	.1475	.1590	.1410	.1275	.1480	.1307	.1436	.1422
....	....	....	50,000	.1557	.1493	.1442	.1457	.1509	.1618	.1448	.1300	.1492	.1335	.1465	.1451
....	....	....	51,000	.1578	.1520	.1457	.1494	.1530	.1642	.1468	.1324	.1537	.1365	.1491	.1477
....	....	....	52,000	.1609	.1545	.1500	.1523	.1570	.1674	.1500	.1364	.1550	.1388	.1522	.1508
....	....	....	53,000	.1634	.1570	.1537	.1555	.1589	.1699	.1535	.1383	.1595	.1427	.1552	.1538
....	....	....	54,000	.1668	.1597	.1541	.1576	.1626	.1729	.1560	.1424	.1615	.1454	.1579	.1565
....	....	....	55,000	.1690	.1627	.1586	.1609	.1653	.1755	.1585	.1450	.1648	.1484	.1609	.1595
....	....	....	56,000	.1720	.1658	.1615	.1640	.1688	.1781	.1620	.1469	.1675	.1506	.1637	.1624
....	....	....	57,000	.1754	.1693	.1633	.1665	.1706	.1820	.1650	.1500	.1704	.1538	.1666	.1653
....	....	....	58,000	.1771	.1710	.1670	.1698	.1740	.1837	.1668	.1538	.1726	.1566	.1692	.1679
....	....	....	59,000	.1802	.1748	.1692	.1725	.1769	.1862	.1705	.1560	.1764	.1595	.1722	.1709
....	....	....	60,000	.1830	.1773	.1727	.1750	.1795	.1889	.1734	.1585	.1798	.1624	.1750	.1737
....	....	....	61,000	.1860	.1806	.1748	.1778	.1822	.1916	.1758	.1620	.1804	.1649	.1776	.1763
....	....	....	62,000	.1879	.1825	.1774	.1815	.1855	.1945	.1784	.1655	.1840	.1675	.1805	.1792
....	....	....	63,000	.1909	.1856	.1805	.1835	.1878	.1975	.1821	.1680	.1859	.1706	.1832	.1819
....	....	....	64,000	.1934	.1880	.1833	.1868	.1911	.1976	.1843	.1708	.1896	.1743	.1859	.1846
....	....	....	65,000	.1963	.1911	.1862	.1898	.1933	.2029	.1869	.1732	.1913	.1762	.1887	.1874
....	....	....	66,000	.1967	.1940	.1888	.1925	.1965	.2050	.1900	.1770	.1941	.1789	.1913	.1900
....	....	....	67,000	.2018	.1966	.1914	.1950	.1976	.2080	.1927	.1793	.1977	.1829	.1943	.1930
....	....	....	68,000	.2039	.1975	.1942	.1957	.2024	.2100	.1950	.1819	.1980	.1843	.1963	.1951
....	....	....	69,000	.2072	.2020	.1969	.2008	.2047	.2129	.1983	.1850	.2035	.1874	.1999	.1987
....	....	....	70,000	.2089	.2049	.1971	.2025	.2065	.2153	.1995	.1880	.2052	.1905	.2018	.2006
....	....	....	71,000	.2115	.2071	.2024	.2066	.2095	.2171	.2050	.1909	.2076	.1927	.2050	.2038
....	....	....	72,000	.2144	.2100	.2044	.2083	.2120	.2202	.2076	.1929	.2100	.1957	.2075	.2063
....	....	....	73,000	.2169	.2125	.2075	.2115	.2149	.2225	.2100	.1960	.2140	.1989	.2105	.2093
....	....	....	74,000	.2190	.2150	.2105	.2137	.2177	.2246	.2121	.1991	.2155	.1995	.2127	.2115
....	....	....	75,000	.2219	.2176	.2127	.2167	.2205	.2275	.2148	.1999	.2180	.2050	.2155	.2143
....	....	....	76,000	.2232	.2200	.2150	.2189	.2226	.2294	.2170	.2060	.2200	.2076	.2180	.2168
....	....	....	77,000	.2260	.2227	.2172	.2217	.2254	.2320	.2205	.2080	.2230	.2093	.2206	.2194
....	....	....	78,000	.2287	.2258	.2209	.2240	.2283	.2345	.2232	.2104	.2254	.2120	.2233	.2221
....	....	....	79,000	.2307	.2274	.2228	.2272	.2300	.2359	.2253	.2129	.2274	.2147	.2254	.2242

			80,000	.2330	.2300	.2254	.2290	.2328	.2391	.2275	.2164	.2300	.2176	.2281	.2269
			81,000	.2350	.2320	.2275	.2315	.2349	.2110	.2307	.2186	.2328	.2200	.2304	.2292
			82,000	.2378	.2348	.2305	.2336	.2371	.2436	.2321	.2213	.2340	.2230	.2328	.2316
			83,000	.2400	.2369	.2329	.2363	.2399	.2454	.2356	.2237	.2365	.2256	.2353	.2341
			84,000	.2425	.2395	.2349	.2389	.2419	.2475	.2371	.2260	.2384	.2278	.2374	.2364
			85,000	.2440	.2414	.2374	.2418	.2441	.2498	2390	.2284	.2415	.2295	.2397	.2387
			86,000	.2464	.2434	.2396	.2433	.2464	.2515	.2421	.2310	.2434	.2326	.2420	.2410
			87,000	.2490	.2460	.2420	.2455	.2485	.2538	.2447	.2335	.2455	.2350	.2443	.2433
			88,000	.2502	.2479	.2440	.2479	.2504	.2555	.2464	.2360	.2478	.2366	.2463	.2453
			89,000	.2528	.2505	.2465	.2498	.2529	.2580	.2491	.2385	.2497	.2394	.2487	.2477
			90,000	.2547	.2526	.2485	.2522	.2546	.2595	.2509	.2410	.2511	.2420	.2507	.2497
			91,000	.2561	.2542	.2509	.2539	.2575	.2615	.2527	.2438	.2537	.2440	.2528	.2518
			92,000	.2580	.2566	.2526	.2559	.2592	.2636	.2547	.2459	.2552	.2466	.2548	.2539
			93,000	.2602	.2583	.2549	.2580	.2610	.2651	.2570	.2480	.2575	.2483	.2568	.2559
			94,000	.2620	.2602	.2576	.2600	.2631	.2670	.2591	.2504	.2595	.2505	.2589	.2580
			95,000	.2639	.2621	.2598	.2616	.2651	.2688	.2610	.2521	.2613	.2526	.2608	.2599
			96,000	.2655	.2640	.2605	.2638	.2665	.2705	.2627	.2543	.2631	.2549	.2626	.2617
			97,000	.2676	.2656	.2627	.2657	.2685	.2720	.2650	.2568	.2650	.2568	.2646	.2637
			98,000	.2691	.2677	.2644	.2674	.2708	.2735	.2669	.2585	.2669	.2588	.2664	.2655
			99,000	.2710	.2695	.2665	.2697	.2723	.2755	.2681	.2605	.2686	.2609	.2683	.2674
			100,000	.2728	.2715	.2680	.2713	.2739	.2772	.2706	.2633	.2701	.2633	.2702	.2693

HARDNESS OF BRONZE FROM LYLE LIFE-SAVING GUNS.

Specimens, 1″ long; 1″ diameter.
Pyramidal indenting tool used, loaded with 10,000 pounds.

Marks.	Length of cut.	Hardness.	Marks.	Length of cut.	Hardness.
	Inch.			*Inch.*	
4	.962	3.74	63	.883	4.85
5	.898	4.60	64	.859	5.26
6	.912	4.39	65	.901	4.56
7	.896	4.63	66	.874	4.99
11	.862	5.20	67	.842	5.58
35	.888	4.76	68	.907	4.47
36	.854	5.35	69	.902	4.54
37	.818	6.09	70	.914	4.37
38	.857	5.30	71	.887	4.77
39	.864	5.17	72	.908	4.45
40	.840	5.62	73	.902	4.54
41	.873	5.01	74	.903	4.52
42	.879	4.91	75	.925	4.21
43	.882	4.86	77	.905	4.50
44	.910	4.42	78	.888	4.76
45	.925	4.22	79	.868	5.10
46	.855	5.33	80	.873	5.01
47	.881	4.88	81	.881	4.88
49	.877	4.95	82	.905	4.50
50	.861	5.22	83	.890	4.73
52	.855	5.33	84	.863	5.19
53	.887	4.78	85	.898	4.60
55	.928	4.17	86	.891	4.72
57	.887	4.78	87	.911	4.41
59	.877	4.95	88	.890	4.73
60	.878	4.93	89	.899	4.59
61	.890	4.73	96	.907	4.47
62	.899	4.59			

COMPRESSION TESTS OF CONCRETE CUBES FOR THE CITY OF CLEVELAND, OHIO.

DESCRIPTION OF MANUFACTURE OF SPECIMENS BY M. W. KINGSLEY, SUPERINTENDENT OF WATERWORKS.

The blocks numbered from 25 to 32, inclusive, are made of 1 part, by measure, of vulcanite Portland cement, 2 parts of slag dust, and 4 parts of crushed slag.

The blocks numbered from 41 to 48, inclusive, are made of 1 part, by measure, of vulcanite Portland cement, 2 parts of lake sand, and 4 parts of broken Kelley Island limestone.

The cement and fine material were first mixed dry by a thorough shoveling, and just enough water was added so as to make the water flush when the mixture was pounded or squeezed. The stone or slag was wetted sufficiently so that it did not absorb any of the water from the cement and was then added to the mixture of cement and fine material, and the whole thoroughly shoveled over. It was then rammed into wooden boxes, in layers of about 2 inches in thickness, sufficient to flush the water to the surface of each layer.

No. 9936.

Marks, 32.
Sectional area, 144.60 square inches.
Gauged length, 5″.

Applied loads.		In gauged length.		Remarks.
Total.	Per square inch.	Compression.	Set.	
Pounds.	*Pounds.*	*Inch.*	*Inch.*	
14,460	100	0.	0.	Initial load.
28,920	200	.0001	....	
57,840	400	.0004	....	
86,760	600	.0007	....	
115,680	800	.0011	....	
144,600	1,000	.0014	.0001	
173,520	1,200	.0018	....	
202,440	1,400	.0022	....	
231,360	1,600	.0027	....	
260,280	1,800	.0033	....	
289,200	2,000	.0039	.0007	
318,120	2,200	.0044	....	
347,040	2,400	.0052	....	
375,960	2,600	.0061	....	
404,880	2,800	.0075	....	
433,800	3,000	.0090	.0028	
465,000	....	....	....	First crack.
467,700	3,234	....	....	Ultimate strength.

No. 9940.

Marks, 48.
Sectional area, 145.32 square inches.
Gauged length, 5″.

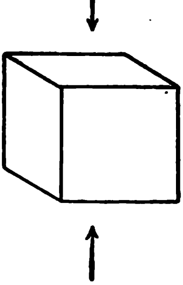
Applied loads.		In gauged length.		Remarks.
Total.	Per square inch.	Compression.	Set.	
Pounds.	*Pounds.*	*Inch.*	*Inch.*	
14,532	100	0.	0.	Initial load.
29,064	200	.0001	....	
58,128	400	.0004	....	
87,192	600	.0007	....	
116,256	800	.0011	....	
145,320	1,000	.0015	.0001	
174,384	1,200	.0019	....	
203,448	1,400	.0023	....	
232,512	1,600	.0028	....	
261,576	1,800	.0032	....	
290,640	2,000	.0037	.0007	
319,704	2,200	.0041	....	
348,768	2,400	.0046	....	
377,832	2,600	.0053	....	
406,896	2,800	.0061	....	
435,960	3,000	.0069	.0017	
505,000	....	....	....	First crack.
511,500	3,520	....	....	Ultimate strength.

Sectional area, 146.28 square inches.
Gauged length, 5″.

Applied loads.		In gauged length.		Remarks.
Total.	Per square inch.	Compression.	Set.	
Pounds.	*Pounds.*	*Inch.*	*Inch.*	
14,628	100	0.	0.	Initial load.
29,256	200	.0001	....	
58,512	400	.0002	....	
87,768	600	.0006	....	
117,024	800	.0008	....	
146,280	1,000	.0012	.0001	
175,536	1,200	.0015	....	
204,792	1,400	.0018	....	
234,048	1,600	.0022	....	
263,304	1,800	.0026	....	
292,560	2,000	.0031	.0003	
321,816	2,200	.0036	....	
351,072	2,400	.0041	....	
380,328	2,600	.0046	....	
409,584	2,800	.0053	....	
438,840	3,000	.0062	.0012	
468,096	3,200	.0076	....	
497,352	3,400	.0088	....	
526,608	3,600	.0106	....	
555,400	3,797	....	....	Ultimate strength.

Marks, 44.
Sectional area, 146.65 square inches.
Gauged length, 5″.

Applied loads.		In gauged length.		Remarks.
Total.	Per square inch.	Compression.	Set.	
Pounds.	*Pounds.*	*Inch.*	*Inch.*	
14,665	100	0.	0.	Initial load.
29,330	200	.0001	....	
58,660	400	.0002	....	
87,990	600	.0006	....	
117,320	800	.0010	....	
146,650	1,000	.0013	.0001	
175,980	1,200	.0019	....	
205,310	1,400	.0022	....	
234,640	1,600	.0028	....	
263,970	1,800	.0032	....	
293,300	2,000	.0036	.0005	
322,630	2,200	.0040	....	
351,960	2,400	.0043	....	
381,290	2,600	.0045	....	
410,620	2,800	.0050	....	
439,950	3,000	.0054	.0008	
469,280	3,200	.0057	....	
498,610	3,400	.0063	....	
527,940	3,600	.0072	....	
557,270	3,800	.0081	....	
582,000	....	....	....	First crack.
586,600	4,000	.0091	.0007	
606,500	4,136	....	....	Ultimate strength.



CUBES TESTED APRIL 30, 1900.

[Age, 52 days. 3 days in air, 28 days in water, then 21 days in air.]

No. of test.	Marks.	Weight.		Dimensions.			Sectional area.	First crack.	Ultimate strength.	
		Total.	Per cubic foot.	Height.	Compressed surface.				Total.	Per square inch.
		Pounds.	*Pounds.*	*Inches.*	*Inches.*	*Inches.*	*Sq. ins.*	*Pounds.*	*Pounds.*	*Pounds.*
9933	29	135¾	133.1	12.04	12.10	12.10	146.41	489,200	489,200	3,341
9934	30	134¾	134.0	11.88	12.10	12.09	146.29	418,000	445,600	3,046
9935	31	133	131.6	12.00	12.09	12.04	145.56	435,000	439,000	3,016
9936	32	134¼	133.2	12.04	11.98	12.07	144.60	465,000	467,700	3,234
9937	45	147	145.2	12.04	12.09	12.02	145.32	518,000	549,800	3,783
9938	46	146½	145.6	11.95	12.07	12.05	145.44	498,000	509,900	3,506
9939	47	147	144.7	12.08	11.98	12.13	145.32	534,000	536,700	3,693
9940	48	147	145.2	12.04	12.02	12.09	145.32	505,000	511,500	3,520

CUBES TESTED JUNE 2, 1900.

[Age, 85 days. 3 days in air, 58 days in water, then 24 days in air.]

10247	25	138½	136.0	12.10	12.00	12.12	145.44	572,000	581,000	3,995
10248	26	137	134.8	12.16	12.15	11.89	144.46	579,900	579,900	4,014
10249	27	142	135.8	12.18	12.21	12.15	148.35	568,000	612,500	4,129
10250	28	138	134.4	12.13	12.11	12.08	146.28	555,400	555,400	3,797
10251	41	145½	146.9	11.95	12.10	11.84	143.26	558,000	612,000	4,272
10252	42	145½	145.4	11.90	11.99	12.12	145.32	567,000	610,700	4,202
10253	43	147½	147.0	11.90	11.99	12.15	145.68	594,000	660,500	4,534
10254	44	147½	146.1	11.90	12.10	12.12	146.65	582,000	606,500	4,136

CONCRETE FROM THE CONTRACTORS' PLANT COMPANY, BOSTON, MASS.

DESCRIPTION OF CONCRETE FURNISHED BY THE CONTRACTORS PLANT COMPANY.

Composition, Giant Portland cement 1, sand 3, crushed stone 5.

The stone passed through a 2¼" ring with all passing a ½" ring screened out.

Specimens marked A and B were mixed in a portable gravity concrete mixer 8 feet in length, in the following manner:

The stone was spread evenly on a platform in front of the mixer, the sand spread evenly on top of the stone, and the cement then spread evenly on top of the sand.

The material was then shoveled into the mixer, "a steel trough containing numerous rows of steel pins, staggered in order to thoroughly mix the sand, cement, and broken stone as they gravitate through the trough.

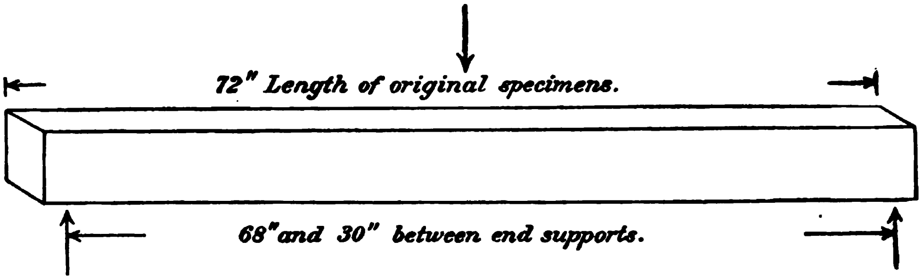
"Water from a spray pipe strikes the mixer about midway its length. By this arrangement the concrete is mixed dry in the upper half and wet in the lower half."

In making specimens A the concrete as discharged from the mixer was allowed to form a cone-shaped pile below, permitting the layer of stones to accumulate around the edges. Permitting the formation of a cone-shaped pile below the mixer was contrary to the instructions of the makers of the machine, but in this case done at the demand of other parties. Sample A1 in particular was believed to contain an excess of stone.

While making the concrete for samples B, the material as discharged was kept leveled off by means of a hoe.

Samples C were made of hand-mixed concrete.

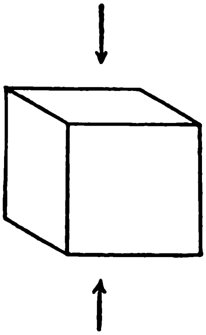
TRANSVERSE TESTS.


72" Length of original specimens.
68" and 30" between end supports.

[Age, 2 days in air, 2 months in water, then 1 month in air.]

No. of test.	Marks.	Dimensions.		Distance between end supports.	Ultimate strength.		Remarks.
		Breadth.	Depth.		Total.	Modulus of rupture.	
		Inches.	*Inches.*	*Inches.*	*Pounds.*	*Pounds.*	
11059	A_5	5.90	6.08	68	1,008	472	Retest of one-half of No. 11059.
11059*a*	....	5.80	6.13	30	2,180	450	Retest of other half of No. 11059.
11059*b*	....	6.13	5.97	30	2,814	564	
11060	C_6	6.09	6.13	30	2,308	454	
11061	....	6.05	6.13	30	2,033	402	
11062	B_5	5.97	6.08	30	2,294	468	
11063	....	5.93	6.13	30	2,655	536	
11064	A_6	4.06	5.96	30	1,759	549	
11065	....	4.07	6.01	30	1,758	538	
11066	C_5	4.17	5.90	30	1,402	435	
11067	....	4.13	5.98	30	1,204	367	
11068	B_6	4.28	6.08	30	1,223	348	

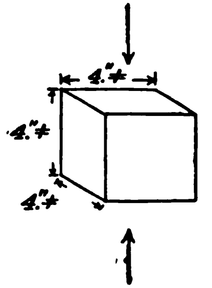
NOTE.—Specimens A_6, B_5, B_6, C_5, and C_6 were broken midway their length in transportation. Tests were made on the fractured ends, using 30" distance between end supports.



[Age, 2 days in air, 2 months in water, then 1 month in air.]

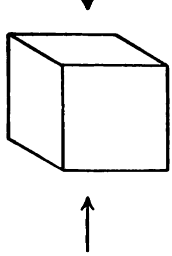
No. of	Marks.	Weight.		Dimensions.			Sectional area.	First crack.	Ultimate strength.	
		Total.	Per cubic foot.	Height.	Compressed surface.				Total.	Per square inch.
		Pounds.	*Pounds.*	*Inches.*	*Inches.*	*Inches.*	*Sq. ins.*	*Pounds.*	*Pounds.*	*Pounds.*
11069	A_1	150	150.1	11.95	12.04	12.00	144.48	324,000	445,200	3,081
11070	A_2	157	152.7	12.04	12.27	12.03	147.61	511,000	596,500	4,041
11071	A_3	158	154	11.90	12.25	12.16	148.96	432,000	637,000	4,276
11072	A_4	160½	153	12.06	12.27	12.25	150.31	487,000	669,000	4,451
11073	B_1	155½	153.1	12.06	12.00	12.13	145.56	456,000	637,500	4,380
11074	B_2	159½	152.8	12.09	12.20	12.23	149.21	366,000	604,500	4,051
11075	B_3	153½	152.1	11.82	12.12	12.17	147.50	413,000	592,800	4,019
11076	B_4	157	151.6	12.10	12.12	12.20	147.86	396,000	597,900	4,044
11077	C_1	157½	153.1	12.04	12.22	12.08	147.62	395,000	519,000	3,516
11078	C_2	159½	153	12.21	12.15	12.14	147.50	381,000	434,600	2,946
11079	C_3	156	152.7	11.99	12.11	12.16	147.26	332,000	494,100	3,355
11080	C_4	152½	151.5	11.98	12.06	12.04	145.20	360,000	425,400	2,930

COMPRESSION TESTS OF TENNESSEE MARBLE, FURNISHED BY THE EVANS MARBLE COMPANY, KNOXVILLE, TENN.



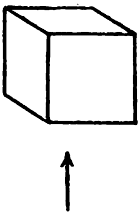
No. of test.	Description.	Marks.	Dimensions.			Sectional area.	First crack.	Ultimate strength.	
			Height.	Compressed surface.				Total.	Per sq. inch.
			Inches.	*Inches.*	*Inches.*	*Sq. inches.*	*Pounds.*	*Pounds.*	*Pounds.*
9729	Evans Marble Co., Knoxville, Tenn	No. 1, pink	4.00	4.00	4.00	16.00	349,200	349,200	21,825
9730	.....do	No. 2, dark cedar	3.99	4.00	4.00	16.00	326,500	326,500	20,406
9731	.....do	No. 3, dark cedar	4.00	4.00	4.00	16.00	295,800	295,800	18,487
9732	.....do	No. 4, pink	4.01	4.01	4.01	16.08	314,000	314,000	19,527
9733	.....do	No. 5, champion pink	4.00	4.01	4.00	16.04	301,000	301,000	18,766
9734	.....do	No. 6, Ellis pink	4.00	4.00	4.00	16.00	337,000	337,000	21,062
9735	Tennessee Producers' Marble Co., Knoxville, Tenn	Z 1	4.03	4.03	4.04	16.28	346,800	346,800	21,302
9736	.....do	Z 2	4.05	4.01	4.04	16.20	199,000	201,000	12,407
9737	.....do	Z 3	4.05	4.02	4.00	16.08	360,700	360,700	22,432
9738	The American Marble Co., Knoxville, Tenn	Gray Tennessee	3.99	3.99	3.99	15.92	295,500	295,500	18,561
9739	.....do	Champion pink	4.00	4.00	4.00	16.00	342,800	342,800	21,425
9740	The United States Marble Co., Knoxville, Tenn	Pink cedar	4.00	4.00	4.00	16.00	372,400	372,400	23,275
9741	.....do	Dark cedar	3.99	3.93	3.99	15.68	399,500	399,500	25,478
9742	Republic Marble Co., Knoxville, Tenn	Republic dark	3.97	4.00	4.01	16.04	261,600	261,600	16,309
9743	.....do	Republic pink	4,00	3.99	4.05	16.16	324,000	324,000	20,050
9744	Ross Marble Co., Knoxville, Tenn	Ross pink	4.01	4.02	3.96	15.92	352,300	352,300	22,129
9745	.....do	Ross gray	3.96	3.95	3.97	15.68	306,500	306,500	19,547
9746	J. J. Craig Marble Co., Knoxville, Tenn		4.00	4.00	4.00	16.00	340,200	340,200	21,262
9747	.....do		4.00	4.00	4.00	16.00	333,000	333,000	20,812
9748	Cedar Bluff Marble Co., Knoxville, Tenn	Cedar pink	4.00	4.00	4.01	16.04	345,000	345,000	21,509

COMPRESSION TESTS OF LIMESTONE FI
CARTHAGE QUARRY COMPANY,
CARTHAGE, MO.



No. of test.	Marks.	Dimensions.			Sectional area.	First crack.	Ultimate strength.	
		Height.	Compressed surface.				Total.	Per square inch.
		Inches.	*Inches.*	*Inches.*	*Sq. inches.*	*Pounds.*	*Pounds.*	*Pounds.*
11086	Quality No. 1 ...	3.99	3.98	3.99	15.88	217,200	217,200	13,680
11087	.....do..........	3.99	4.01	4.00	16.04	219,100	219,100	13,660
11088	Quality No. 2 ...	4.01	4.00	3.99	15.96	241,000	244,500	15,320
11089	.....do..........	4.00	4.01	3.98	15.96	273,400	273,400	17,130

COMPRESSION TESTS OF GRANITE CUBES FROM MOUNT WALDO QUARRIES, FRANKFORT, ME.



No. of test.	How tested.	Specific gravity.	Dimensions.			Sectional area.	First crack.	Ultimate strength.	
			Height.	Compressed surface.				Total.	Per square inch.
			Inches.	*Inches.*	*Inches.*	*Square inches.*	*Pounds.*	*Pounds.*	*Pounds.*
11055	On bed.	2.637	2.01	2.01	2.01	4.04	120,000	128,400	31,782
11056	....do...	2.655	2.00	2.01	2.02	4.06	123,300	132,500	32,635
11057	On side.	2.662	2.01	2.01	2.02	4.06	107,400	122,600	30,197
11058	....do...	2.649	2.01	2.01	2.01	4.04	112,600	117,900	29,183

"BLACK GRANITE" FROM STATE OF MAINE.

Compressed surfaces faced with plaster of paris.

No. of test.	Dimensions.			Sectional area.	First crack.	Ultimate strength.	
	Height.	Compressed surface.				Total.	Per square inch.
	Inches.	*Inches.*	*Inches.*	*Square inches.*	*Pounds.*	*Pounds.*	*Pounds.*
11104	4.26	4.45	3.17	14.11	274,000	296,800	21,035

Felt cushions used ".4 thick between the plaster-of-paris facing and platforms of the testing machine.

No. of test.	How tested.	Dimensions.			Sectional area.	First crack.	Ultimate strength.	
		Height.	Compressed surface.				Total.	Per square inch.
		Inches.	*Inches.*	*Inches.*	*Square inches.*	*Pounds.*	*Pounds.*	*Pounds.*
10245	On bed...	4.06	3.99	4.18	16.68	318,600	313,600	18,801
10246	On side...	4.03	4.00	4.17	16.68	236,200	236,200	14,161

A fragment of this kind of stone, weighing about 2½ pounds, was heated to a low red color and plunged into cold water without spalling. It was again heated to a bright red color and plunged into cold water, whereupon small fragments were detached and the body of the specimen was readily broken into small, irregular-shaped fragments when struck with a hand hammer. A strong sulphurous odor was emitted by the hot stone.

Chemical composition.

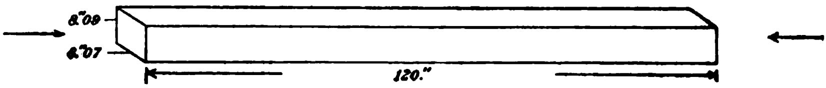
Silica	50.00
Oxide of iron	10.18
Alumina	33.22
Lime	4.95
Magnesia	1.08
Manganous oxide	0.52

CYPRESS WOOD FOR UNITED STATES ENGINEER CORPS.

COMPRESSION AND TRANSVERSE TESTS.

COMPRESSION TESTS.

No. 9682.

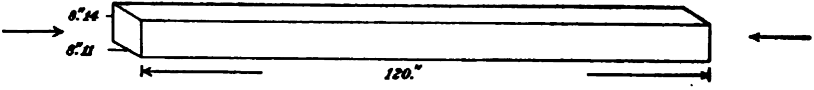


Weight, 202 pounds=44.6 pounds per cubic foot.
Sectional area, 65.28 square inches.
Gauged length, 50″.

Applied loads.		In gauged length.		Deflections at middle.		Remarks.	
Total.	Per square inch.	Compression.	Set.	Horizontal.	Vertical.		
Pounds.	*Pounds.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*		
6,528	100	0.	0.	0.	0.	Initial load.	
13,056	200	.0038	0.	0.	0.		
19,584	300	.0075	0.	0.	0.		
26,112	400	.0113	0.	0.	0.		
32,640	500	.0152	0.	0.	0.		
39,168	600	.0192	0.	0.	0.		
45,696	700	.0232	0.	0.	0.		
52,224	800	.0269	0.	0.	.01		
58,752	900	.0309	0.	0.	.01		
65,280	1,000	.0342	.0005	0.	.02		
30,000	460					Rested sixteen hours under this load.	
65,280	1,000	.0344	−.0004				
78,836	1,200	.0427	−.0002	0.	.02		
91,392	1,400	.0507	−.0003	0.	.02		
104,448	1,600	.0588	−.0001	0.	.02		
117,504	1,800	.0670	.0000	0.	.03	*Deflection sets.*	
130,560	2,000	.0753	+.0001	0.	.04		
143,616	2,200	.0832	.0001	−.01	.03		
156,672	2,400	.0917	.0003	−.01	.03	Horizontal.	Vertical.
169,728	2,600	.0998	.0003	−.01	.04		
182,784	2,800	.1092	.0047	−.02	.04		
182,784	2,800	.1119	.0029	−.02	.04		
195,840	3,000	.1207	.0039	−.02	.06	−.01	.00
208,896	3,200	.1315	.0038	−.04	.11		
219,000	3,355					Ultimate strength.	

Failed by triple flexture. Fibers crushed at middle of length and near the ends. Sap exuded from the sections crushed.

	Grains.
Weight of section 1 inch long, in condition tested	10,830
Weight of section 1 inch long, dry	6,865
Loss	3,965=36.6 per cent.



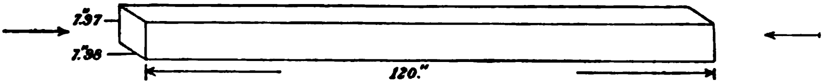
Weight, 171 pounds=37.3 pounds per cubic foot.
Sectional area, 66.01 square inches.
Gauged length, 50″.

Applied loads.		In guaged length.		Deflections at middle.		Remarks.
Total.	Per square inch.	Compression.	Set.	Horizontal.	Vertical.	
Pounds.	*Pounds.*	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
6,601	100	0.	0.	0.	0.	Initial load.
13,202	200	.0033	−.0002	0.	0.	
19,803	300	.0071	−.0003	0.	0.	
26,404	400	.0110	−.0002	0.	0.	
33,005	500	.0150	−.0001	0.	0.	
39,606	600	.0189	−.0001	0.	0.	
46,207	700	.0229	−.0001	0.	0.	
52,808	800	.0268	+.0002	0.	0.	
59,409	900	.0309	.0002	0.	0.	
66,010	1,000	.0349	.0002	0.	0.	
79,212	1,200	.0427	.0004	0.	0.	
92,414	1,400	.0505	.0004	0.	0.	
105,616	1,600	.0584	.0001	0.	0.	
118,818	1,800	.0662	.0002	0.	0.	
132,020	2,000	.0745	.0003	0.	0.	
145,222	2,200	.0825	.0003	0.	0.	
158,424	2,400	.0908	.0006	.01	0.	
6,601	100	....	....	....	0.	Rested 1 hour under this load.
171,626	2,600	.1000	.0004	.02	0.	
184,828	2,800	.1085	.0007	.02	0.	
198,030	3,000	.1176	.0015	.02	0.	
211,232	3,200	.1289	.0025	.02	0.	
224,434	3,400	.1495	.0063	.03	0.	
228,200	3,457	....	....	....	....	Ultimate strength.

Fibres crushed at a place 45″ from the end of the column.

	Grains.
Weight of section 1 inch long in condition tested	9,990
Weight of section 1 inch long, dry..	6,750
Loss...	3,240=32.4 per cent.

No. 9684.



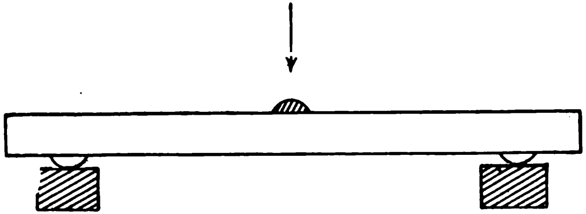
Weight, 281 pounds=63.6 pounds per cubic foot.
Sectional area, 63.60 square inches.
Gauged length, 50".

Applied loads.		In gauged length.		Deflections at middle.		Remarks.
Total.	Per square inch.	Compression.	Set.	Horizonal.	Vertical.	
Pounds.	*Pounds.*	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
6,360	100	0.	0.	0.	0.	Initial load.
12,720	200	.0059	0.	0.	0.	
19,080	300	.0120	−.0001	0.	0.	
25,440	400	.0180	0.	0.	0.	
31,800	500	.0239	0.	0.	0.	
38,160	600	.0298	.0003	0.	0.	
44,520	700	.0361	.0005	.01	0.	
50,880	800	.0422	.0005	.01	0.	
57,240	900	.0482	.0005	.02	0.	
63,600	1,000	.0541	.0007	.02	0.	
76,320	1,200	.0662	.0010	.03	0.	
89,040	1,400	.0781	.0008	.03	0.	
101,760	1,600	.0905	.0010	.04	−.01	
114,480	1,800	.1026	.0015	.04	−.02	
127,200	2,000	.1153	.0019	.05	−.02	
139,920	2,200	.1279	.0025	.05	−.03	
152,640	2,400	.1410	.0030	.06	−.03	
165,360	2,600	.1558	.0042	.06	−.04	
178,080	2,800	.1705	.0050	.09	−.05	
190,800	3,000	.1910	.0072	.10	−.07	
198,000	3,113	....	....	....	....	Ultimate strength.

Failed 24" from end of column at a group of knots ¼" diameter.

	Grains.
Weight of section 1 inch long in condition tested..................................	16,575
Weight of section 1 inch long, dry	8,235
Loss	8,340=50.3 per cent.

TRANSVERSE TESTS.



Sticks supported at the ends: loaded at the middle.

No. of test.	Weight.		Dimensions.			Distance between end supports.	Width of face of plunger.	Ultimate strength.		Fractures.
	Total.	Per cubic foot.	Length.	Breadth.	Depth.			Total.	Modulus of rupture.	
	Pounds.	*Pounds.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Pounds.*	*Pounds.*	
494	23	27	48.3	5.52	5.52	42	1.85	9,850	3,889	Under 8,400 pounds a long, splintering fracture occurred on the tension side at middle of length. Continuing the test, the stick failed under 9,850 pounds, with a coarse, splintering fracture on the tension side. The middle plunger, 1.85 face, indented the compression side of the wood a depth of ″.30.
495	25½	30	48.25	5.52	5.52	42	3	10,680	4,000	Coarse, splintering fracture on the tension side. Middle plunger indented the wood ″.08.
496	23½	27.6	48.3	5.52	5.52	42	3	11,170	4,184	Coarse, splintering fracture on the tension side. Middle plunger indented the wood ″.03.
497	37	36.2	72	2.80	8.75	54	3	12,350	4,667	Coarse, splintering fracture on the tension side. Middle plunger indented the wood ″.40.
498	32½	32.2	72	2.77	8.76	54	4	12,940	4,931	Coarse, splintering fracture on the tension side. Middle plunger indented the wood ″.45.
499	31½	31.2	72	2.77	8.76	54	4	11,020	4,200	Coarse, splintering fracture on the tension side. Middle plunger indented the wood ″.40.

Church built in 1729. Old wooden trusses removed in 1899 and iron trusses put in.

The white-pine sticks were hewn, the oak sawed. Pine roof boards, not represented in these tests, were sawed. Handmade nails were found driven into or through the pine and oak timbers and the boarding.

The material tested is believed to belong to the original timbering of the roof, and therefore to have been in the roof a period of 170 years. The tests show normal strength for wood of these kinds, and in the condition of the samples with reference to the number and size of the knots present.

No. 9685.

White Pine, Hewn Stick.

Rings of growth per inch, 7.
Length, 57".60.
Sectional area, 9".65 x 7".33 = 70.73 square inches.
Gauged length, 30".
Stick contains 6 knots, ⅜" to 1½" diameter.

Applied loads.		In gauged length.		Deflections at middle.		Remarks.
Total.	Per square inch.	Compression.	Set.	Horizontal.	Vertical.	
Pounds.	*Pounds.*	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
7,073	100	0.	0.	0.	0.	
14,146	200	.0013	—.0001	...	...	Initial load.
21,219	300	.0029	—.0002	...	...	
28,292	400	.0044	—.0003	...	...	
35,365	500	.0061	—.0005	...	...	
42,438	600	.0076	—.0006	...	...	
49,511	700	.0094	—.0007	...	...	
56,584	800	.0114	—.0009	...	...	
63,657	900	.0131	—.0008	...	...	
70,730	1,000	.0151	—.0010	...	...	
77,803	1,100	.0170	—.0011	...	...	
84,876	1,200	.0191	—.0011	...	...	
91,949	1,300	.0212	—.0010	...	...	
99,022	1,400	.0233	—.0010	...	...	
106,095	1,500	.0254	—.0010	...	...	
113,168	1,600	.0275	—.0010	...	...	
120,241	1,700	.0295	—.0010	...	...	
127,314	1,800	.0320	—.0010	...	...	
134,387	1,900	.0340	—.0012	...	...	
141,460	2,000	.0361	—.0011	...	...	
148,533	2,100	.0382	—.0011	...	...	
155,606	2,200	.0405	—.0012	...	...	
162,679	2,300	.0425	—.0012	...	...	Snapping sounds.
169,752	2,400	.0449	—.0012	...	...	
176,825	2,500	.0471	—.0014	...	...	
183,898	2,600	.0495	—.0017	...	...	
190,971	2,700	.0518	—.0015	...	...	
198,044	2,800	.0541	—.0015	...	...	
205,117	2,900	.0565	—.0016	...	...	
212,190	3,000	.0589	—.0016	...	...	
219,263	3,100	.0613	—.0018	...	...	
226,336	3,200	.0640	—.0017	...	...	
233,409	3,300	.0665	—.0017	...	...	
240,482	3,400	.0698	—.0015	...	...	
247,555	3,500	.0755	—.0000	...	...	
254,628	3,600	.0870	+.0033	...	...	
258,300	3,652	...	...	...	...	Ultimate strength.

Fibers crushed at group of knots 20" from end of stick.

No. 9687.

RED OAK.

Rings of growth per inch, 11.
Length, 47″.60.
Sectional area, 5″.46 x 3″.62=19.76 square inches.
Gauged length, 30″.
Stick contains wavy grain and small knots along one side.

Applied loads.		In gauged length.		Deflections at middle.		Remarks.
Total.	Per square inch.	Compression.	Set.	Horizontal.	Vertical.	
Pounds.	*Pounds.*	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,976	100	0.	0.	0.	0.	Initial load.
3,952	200	.0020	−.0001	....	....	
5,928	300	.0040	−.0004	....	....	
7,904	400	.0064	−.0004	....	....	
9,880	500	.0088	−.0005	....	....	
11,856	600	.0115	−.0005	....	....	
13,832	700	.0141	−.0005	....	....	
15,808	800	.0168	−.0005	....	....	
17,784	900	.0191	−.0004	....	....	
19,760	1,000	.0220	−.0003	....	....	
23,712	1,200	.0271	−.0002	....	....	
27,664	1,400	.0326	−.0001	....	....	
31,616	1,600	.0379	.0000	....	....	
35,568	1,800	.0432	+.0002	....	....	
39,520	2,000	.0484	.0003	....	....	
43,472	2,200	.0543	.0004	....	....	
47,424	2,400	.0598	.0003	....	....	Snapping sounds.
51,376	2,600	.0665	.0011	....	....	
55,328	2,800	.0734	.0022	....	....	
59,280	3,000	.0814	.0031	....	....	
63,232	3,200	.0891	.0038	....	....	
67,184	3,400	.0990	.0058	....	....	
71,136	3,600	.1114	.0086	....	....	
72,400	3,664	....	....	....	....	Ultimate strength.

Fibers crushed at a knot 6″ from end of stick, and split along the grain.

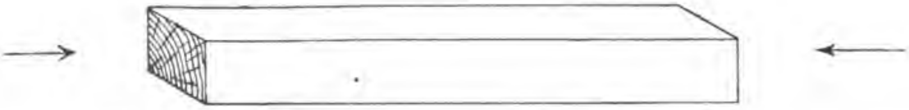
RED OAK.

Rings of growth per inch, 11.
Length, 47″.80.
Sectional area, 5″.38 x 3″.63=19.52 square inches.
Gauged length, 30″.

Applied load.		In gauged length.		Deflections at middle.		Remarks.
Total.	Per square inch.	Compression.	Set.	Horizontal.	Vertical.	
Pounds.	*Pounds.*	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
1,952	100	0.	0.	0.	0.	Initial load.
3,904	200	.0018	−.0001	....	....	
7,808	400	.0059	−.0001	....	....	
11,712	600	.0104	−.0001	....	....	
15,616	800	.0146	−.0001	....	....	
19,520	1,000	.0189	0.	....	....	
23,424	1,200	.0232	+.0001	....	....	
27,328	1,400	.0278	.0001	....	....	
31,232	1,600	.0325	.0005	....	....	
35,136	1,800	.0369	.0006	....	....	
39,040	2,000	.0411	.0007	....	....	
42,944	2,200	.0457	.0009	....	....	
46,848	2,400	.0503	.0009	....	....	
50,752	2,600	.0549	.0011	....	....	
54,656	2,800	.0604	.0014	....	....	
58,560	3,000	.0654	.0016	....	....	
62,464	3,200	.0712	.0024	....	....	
66,368	3,400	.0765	.0030	....	....	
70,272	3,600	.0840	.0048	....	....	
74,176	3,800	.0913	.0059	....	....	
78,080	4,000	.1002	.0080	....	....	
81,984	4,200	.1185	.0120	....	....	Snapping sounds.
85,888	4,400	.1405	.0218	....	....	
88,600	4,539	....	....	....	....	Ultimate strength.

Fibers crushed at knots 6″ and 14″ from end of stick, and split along the grain.

COMPRESSION TESTS.



No. of test.	Kind of wood.	Weight.		Dimensions.			Sectional area.	Ultimate strength.		Manner of failure.
		Total.	Per cubic foot.	Length.	Width.	Thickness.		Total.	Per square inch.	
		Pounds.	*Pounds.*	*Inches.*	*Inches.*	*Inches.*	*Sq. inches.*	*Pounds.*	*Pounds.*	
9685	White pine	54	22.9	57.60	9.65	7.33	70.73	258,300	3,652	Fibers crushed at group of knots 20" from end of stick.
9686	.....do............	106	34.2	71.05	9.50	7.88	74.86	218,400	2,917	Failed at group of knots 18" from the end of stick. Conta 10 knots from 1" to 3" diameter.
9687	Red oak..........	24	44.1	47.60	5.46	3.62	19.76	72,400	3,664	Fibers crushed at a knot 6" from end of stick, and split al the grain.
9688	.....do	27	41.5	48.60	6.02	3.84	23.12	140,100	6,060	Fibers crushed at a knot 11" from end of stick.
9689	.....do	22¼	41.6	47.80	5.38	3.63	19.52	88,600	4,539	Fibers crushed at knots 6" and 14" from end of stick, and s along the grain.
9690	.....do	14	38.8	47.50	4.04	3.25	13.13	82,020	6,247	Failed by triple flexure.
9691	.....do	14¼	40.6	47.60	4.03	3.22	12.98	68,600	5,285	Oblique fracture along the grain near middle of length.

ENDURANCE OF ROTATING SHAFTS.

No. 317.

Marks, $\frac{7 \times 1}{7}$

Shaft turned down from steel bar 1¼″ diameter; 0.26 carbon. Oil-tempered and annealed at high heat.

Diameter, 1″.00; speed of rotation, 500 per minute.

Length between end supports, 33″.

Loaded over 4″ length at middle.

Deflections measured on chord of 10″.

Maximum fiber stress per square inch.	Number of rotations.		Micrometer readings for deflections.				Deflections.	Sets.	Remarks.
	Successive.	Total.	On line.	Un-loaded.	Loaded.	Un-loaded.			
Pounds.				*Inch.*	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
40,000	....	36,502,480	a	.1542	.1209	.1541	.0332	.0001	
			b	.1550	.1218	.1550	.0332	.0000	
			c	.1549	.1215	.1547	.0332	.0002	
	2,475,480	38,977,960	a	.1542	.1207	.1541	.0334	.0001	
			b	.1550	.1215	.1549	.0334	.0001	
			c	.1549	.1215	.1548	.0333	.0001	
	2,675,120	41,653,080	a	.1542	.1207	.1541	.0334	.0001	
			b	.1550	.1215	.1549	.0334	.0001	
			c	.1548	.1213	.1547	.0334	.0001	
	2,556,370	44,209,450	a	.1541	.1208	.1540	.0332	.0001	
			b	.1549	.1216	.1549	.0333	.0000	
			c	.1548	.1215	.1548	.0333	.0000	
	2,308,350	46,517,800	a	.1543	.1209	.1542	.0333	.0001	
			b	.1550	.1216	.1549	.0333	.0001	
			c	.1550	.1215	.1549	.0334	.0001	
	2,532,970	49,050,770	a	.1543	.1209	.1542	.0333	.0001	
			b	.1550	.1217	.1550	.0333	.0000	
			c	.1549	.1215	.1549	.0334	.0000	
	1,761,600	50,812,370	......	....	....	....	....	....	Shaft ruptured at north edge of south middle bearing.

No. 318.

Marks, $\overset{7 \times 1}{9}$

Shaft turned down from steel bar 1¼″ diameter; 0.26 carbon. Hardened.

Diameter, 1.″00; speed of rotation, 500 per minute.

Length between end supports, 33″.

Loaded over 4″ length at middle.

Deflections measured on chord of 10″.

Maximum fiber stress per square inch.	Number of rotations.		Micrometer readings for deflections.				Deflections.	Sets.	Remarks.
	Successive.	Total.	On line.	Un-loaded.	Loaded.	Un-loaded.			
Pounds.				*Inch.*	*Inch.*	*Inch.*	*Inch.*	*Inch.*	
40,000	0	0	a	.1565	.1236	.1564	.0328	.0001	
			b	.1553	.1225	.1553	.0328	.0000	
			c	.1553	.1226	.1553	.0327	.0000	
	1,000	1,000	a	.1564	.1239	.1564	.0325	.0000	
			b	.1553	.1228	.1552	.0324	.0001	
			c	.1552	.1226	.1551	.0325	.0001	
	9,000	10,000	a	.1570	.1237	.1569	.0332	.0001	
			b	.1547	.1213	.1546	.0333	.0001	
			c	.1550	.1217	.1548	.0331	.0002	
	3,069,930	3,079,930	a	.1570	.1237	.1569	.0332	.0001	
			b	.1550	.1217	.1550	.0333	.0000	
			c	.1552	.1221	.1551	.0330	.0001	
	15,051,070	18,131,000	a	.1568	.1240	.1568	.0328	.0000	
			b	.1553	.1224	.1552	.0328	.0001	
			c	.1554	.1224	.1554	.0330	.0000	
	1,447,810	19,578,810	......	....	....	....	....	....	Shaft ruptured ″.20 north of the south edge of south middle bearing.

Summarized tabulation.

No. of test.	Marks.	Carbon.	Maximum fiber stress per square inch.	Total number of rotations.	Treatment of steel.	Rema
			Pounds.			
309	7-B-1	0.733	40,000	99,325,630	Untreated, hot-rolled bar	Not ruptu
310	9-C-2	0.824	40,000	104,518,130	....do	Do.
308	11-C-3	1.094	40,000	80,190,400	....do	Do.
317	7 × 1 7	0.26	40,000	50,812,370	Oil-tempered and annealed at high heat	Ruptured
318	7 × 1 9	0.26	40,000	19,578,810	Hardened	Do.

Rope composed of 5 strands, hemp covered, of 19 wires each.
Samples prepared with eye splices at ends.

No. of test.	Actual circumference.	Diameter of wires.	Length between splices.	Tensile strength.	Parted.
	Inches.	*Inch.*	*Inches.*	*Pounds.*	
9759	$2\frac{13}{16}$	.034	33.25	14,900	3 strands at the splice.
9760	$3\frac{1}{16}$	.045	34.	17,890	2 strands at the splice.

$\frac{3}{4}''$ steel wire retraction rope.
Section 6 feet long between jaws.

	Tensile strength.	Parted.
	Pounds.	
First break	34,200	3 strands at face of jaws.
Second break	32,180	Do.

LINEN SHOT LINES FOR UNITED STATES LIFE-SAVING SERVICE.

ROPE MADE OF SMITH & DOVE'S SAIL TWINE.

No. 9.

SHOT LINES.

Three strands of 16 threads each.
Diameter ".31.
Lay, one turn in 1".

No. of test.	Weight of coil.		End of coil tested.	Tensile strength.	Parted.
	Lbs.	*Oz.*		*Pounds.*	
9941	36	8	Inside	1,384	1 strand at the pin.
9942	38	0	Outside	1,183	Do.
9943	37	12	Inside	1.384	1 strand 8" from pin.
9944	37	12	Outside	1,400	1 strand at the pin.
9945	37	8	do	1,329	Do.
9946	37	12	do	1,300	1 strand 12" from pin.
9947	38	0	do	1,134	2 strands at the pin.
9948	38	0	do	1,147	1 strand at the pin.
9949	38	0	Inside	1,210	1 strand at the middle.
9950	38	4	Outside	1,205	1 strand at the pin.
9951	36	8	Inside	1,225	Do.
9952	38	0	Outside	1,148	1 strand 19" from pin.
9953	36	4	do	1,339	1 strand at the pin.
9954	37	8	do	1,298	Do.
9955	36	8	do	1,210	Do.
9956	37	8	do	1,308	1 strand at the middle.
9957	36	8	Inside	1,152	1 strand at the pin.
9958	37	8	Outside	1,280	1 strand 12" from pin.
9959	36	8	do	1,381	1 strand at the pin.
9960	37	8	do	1,284	Do.
9961	37	12	do	1,342	Do.
9962	36	12	do	1,342	1 strand 4" from pin.
9963	36	12	do	1,266	1 strand at the pin.
9964	37	12	Inside	1,262	Do.
9965	36	12	Outside	1,259	Do.
9966	36	8	Inside	1,295	1 strand at the middle.
9967	37	0	Outside	1,232	2 strands at the pin.
9968	38	0	do	1,205	1 strand at the middle.
9969	36	8	do	1,354	1 strand at the pin.
9970	36	12	Inside	1,115	Do.
9971	37	12	Outside	1,130	1 strand 12" from pin.
9972	36	8	do	1,446	1 strand 3" from pin.
9973	37	8	do	1,345	2 strands at the pin.
9974	36	8	do	1,374	1 strand at the pin.
9975	36	12	do	1,295	Do.
9976	37	8	Inside	1.378	Do.
9977	36	8	Outside	1,180	1 strand at the middle.
9978	36	8	do	1,344	1 strand 20" from pin.
9979	37	12	do	1,305	1 strand 18" from pin.
9980	36	8	do	1,134	1 strand at the pin.
9981	37	12	do	1,226	2 strands at the pin.
9982	38	0	do	1,250	1 strand at the middle.
9983	36	8	do	1,404	2 strands at the pin.
9984	38	0	do	1,255	1 strand 24" from pin.
9985	36	12	do	1,247	2 strands at the pin.
9986	36	12	do	1,237	1 strand at the pin.
9987	36	12	do	1,340	Do.
9988	36	8	do	1,152	1 strand at the middle.
9989	36	4	do	1,361	1 strand 18" from pin.
9990	36	8	do	1,274	1 strand 7" from pin.
9991	36	12	do	1,281	1 strand at middle.
9992	36	12	do	1,248	1 strand at the pin.
9993	37	4	do	1,252	1 strand 22" from pin.
9994	36	12	do	1,226	1 strand at the pin.
9995	36	12	do	1,170	1 strand 26" from pin.
9996	36	8	do	1,257	1 strand at the pin.
9997	38	0	do	1,191	Do.
9998	37	4	do	1,340	3 strands at the pin.
9999	36	0	do	1,310	2 strands at the pin.
10000	36	8	do	1,386	1 strand at the pin.
10001	37	0	Inside	1,208	Do.
10002	37	12	Outside	1,244	Do.
10003	37	12	do	1,090	1 strand 24" from pin.
10004	36	12	do	1,302	1 strand at the pin.
10005	36	12	do	1,339	2 strands at the pin.
10006	36	8	do	1,208	1 strand 24" from pin.
10007	38	0	do	1,240	1 strand 18" from pin.

No. of test.	Weight of coil.		End of coil tested.	Tensile strength.	Parted.
	Lbs.	*Oz.*		*Pounds.*	
10008	38	0	Outside	1,243	1 strand at the pin.
10009	38	0	do	1,196	1 strand 20″ from pin.
10010	36	12	do	1,183	3 strands at the pin.
10011	36	12	do	1,190	1 strand 5″ from pin.
10012	36	12	Inside	1,360	1 strand at the pin.
10013	37	8	Outside	1,280	3 strands at the pin.
10014	37	12	do	1,235	2 strands at the pin.
10015	37	12	do	1,387	1 strand at the pin.
10016	39	4	do	1,283	Do.
10017	37	12	do	1,301	1 strand 5″ from pin.
10018	39	0	do	1,273	1 strand 22″ from pin.
10019	37	8	do	1,356	2 strands at the pin.
10020	37	12	do	1,298	1 strand at the pin.
10021	36	4	do	1,210	1 strand at the middle.
10022	37	12	do	1,326	1 strand 12″ from pin.
10023	37	12	do	1,493	1 strand at the middle.
10024	37	8	do	1,367	1 strand at the pin.
10025	36	8	Inside	1,398	Do.
10026	36	8	Outside	1,340	Do.
10027	36	12	do	1,252	Do.
10028	36	8	do	1,386	Do.
10029	36	8	do	1,247	1 strand 12″ from pin.
10030	36	8	do	1,242	1 strand at the pin.
10031	38	0	do	1,268	Do.
10032	37	4	do	1,253	Do.
10033	37	12	Inside	1,185	Do.
10034	38	0	Outside	1,234	1 strand 24″ from pin.
10035	38	0	do	1,288	1 strand at the middle.
10036	36	12	do	1,220	Do.
10037	37	8	do	1,358	1 strand at the pin.
10038	38	0	do	1,202	2 strands at the pin.
10039	36	4	do	1,270	1 strand at the pin.
10040	36	0	do	1,362	1 strand 3″ from pin.

No. 7 Shot Lines.

Three strands of 9 threads each.
Diameter, ″.23.
Lay, one turn in ″.83.

No. of test.	Weight of coil.		End of coil tested.	Tensile strength.	Parted.
	Lbs.	*Oz.*		*Pounds.*	
10043	21	9	Outside	797	3 strands at pin.
10044	21	10	do	769	1 strand at the middle.
10045	21	6	do	799	1 strand 8″ from pin.
10046	21	10	do	779	1 strand at the pin.
10047	21	6	do	775	Do.
10048	21	6	do	753	Do.
10049	21	8	do	741	Do.
10050	21	6	do	770	1 strand at the middle.
10051	21	10	do	765	2 strands at the pin.
10052	22	0	do	796	1 strand at the pin.
10053	21	6	do	794	Do.
10054	21	10	do	750	Do.
10055	22	0	do	830	1 strand 14″ from pin.
10056	22	0	do	835	1 strand at the pin.
10057	22	1	do	818	Do.
10058	21	11	do	720	2 strands at the pin.
10059	21	13	do	778	2 strands at the middle.
10060	22	0	do	784	1 strand at the pin.
10061	21	11	do	788	1 strand 20″ from pin.
10062	21	12	do	746	1 strand 12″ from pin.
10063	21	13	Inside	804	2 strands at the pin.
10064	21	8	Outside	791	1 strand at the middle.
10065	22	0	do	787	1 strand 17″ from pin.
10066	21	14	do	823	2 strands at the pin.
10067	21	9	do	746	1 strand 12″ from pin.
10068	21	14	do	814	1 strand at the middle.
10069	21	14	do	805	1 strand 24″ from pin.
10070	21	13	do	779	1 strand at the pin.
10071	22	0	do	774	1 strand 18″ from pin.
10072	21	13	do	801	1 strand 5″ from pin.
10073	21	9	do	837	3 strands at the pin.
10074	21	9	do	809	2 strands 8″ from pin.
10075	21	12	do	750	1 strand 12″ from pin.
10076	21	14	do	798	1 strand at the pin.
10077	21	15	do	802	1 strand 24″ from pin.
10078	21	8	do	802	1 strand at the pin.
10079	21	8	do	790	Do.
10080	21	10	do	600	Do.
10080 *a*			do	763	1 strand 7″ from pin.
10081	21	12	do	846	1 strand 24″ from pin.
10082	21	13	do	805	1 strand 7″ from pin.
10083	21	12	do	801	1 strand at the middle.
10084	21	9	do	652	1 strand at the pin.
10084 *a*			do	783	1 strand 24″ from pin.
10085	21	13	do	794	1 strand at the pin.
10086	21	11	do	797	1 strand 4″ from pin.
10087	21	8	Inside	796	1 strand at the pin.
10088	22	0	Outside	812	1 strand 12″ from pin.
10089	21	8	do	765	1 strand 23″ from pin.
10090	21	15	do	840	1 strand at the pin.
10091	21	12	do	739	Do.
10092	21	13	do	853	Do.
10093	22	0	do	848	2 strands at the pin.
10094	21	11	Inside	820	1 strand at the pin.
10095	21	15	Outside	834	3 strands at the pin.
10096	21	13	do	797	1 strand at the pin.
10097	21	10	do	838	Do.
10098	22	0	do	791	Do.
10099	21	11	do	847	Do.
10100	21	13	do	764	1 strand 14″ from pin.
10101	21	12	do	797	1 strand at the middle.
10102	22	0	do	805	1 strand at the pin.
10103	21	13	do	832	2 strands at the pin.
10104	21	10	do	793	1 strand at the pin.
10105	21	11	do	810	1 strand 9″ from pin.
10106	21	14	do	789	1 strand at the middle.
10107	21	15	do	812	1 strand at the pin.
10108	21	14	do	799	1 strand 7″ from pin.
10109	21	15	do	851	1 strand 10″ from pin.
10110	21	7	do	803	1 strand at the pin.
10111	21	15	do	740	Do.
10112	21	5	Inside	796	Do.

No. 7 Shot Lines—Continued.

No. of test.	Weight of coil.		End of coil tested.	Tensile strength.	Parted.
	Lbs.	*Oz.*		*Pounds.*	
10113	21	14	Outside...........	849	2 strands at the pin.
10114	22	1	Inside	798	1 strand at the pin.
10115	21	8	Outside...........	762	1 strand 18″ from pin.
10116	22	2	.....do	802	1 strand at the pin.
10117	22	0	Inside	820	2 strands at the pin.
10118	21	8	Outside...........	795	1 strand 4″ from pin.
10119	22	0	Inside	796	1 strand at the pin.
10120	22	0	Outside...........	810	Do.
10121	21	12	.....do	821	1 strand 12″ from pin.
10122	21	10	Inside	841	1 strand 8″ from pin.
10123	22	0	Outside...........	799	1 strand at the pin.
10124	22	0	.....do	795	Do.
10125	21	10	.....do	792	2 strands at the pin.
10126	21	8	.....do	801	1 strand 5″ from pin.
10127	21	14	.....do	812	1 strand at the middle.
10128	21	7	Inside	841	Do.
10129	22	0	Outside...........	798	1 strand 17″ from pin.
10130	21	15	.....do	786	2 strands at the pin.
10131	21	13	.....do	830	1 strand at the middle.
10132	21	8	.....do	737	1 strand at the pin.
10133	21	8	.....do	785	1 strand 22″ from pin.
10134	21	12	Inside	882	1 strand 12″ from pin.
10135	21	12	Outside...........	838	1 strand 14″ from pin.
10136	22	2	.....do	797	1 strand at the pin.
10137	21	15	.....do	820	Do.
10138	22	0	.....do	767	1 strand 24″ from pin.
10139	21	14	.....do	798	1 strand 12″ from pin.
10140	21	13	.....do	788	2 strands 12″ from pin.
10141	21	10	.....do	843	1 strand at the pin.
10142	21	8	.....do	783	1 strand at the middle.

No. 4 Shot Lines.

Three strands of 4 threads each.
Diameter, ″.15.
Lay, one turn in ″.66.

No. of test.	Weight of coil.		End of coil tested.	Tensile strength.	Parted.
	Lbs.	*Oz.*		*Pounds.*	
10145	10	7	Outside	385	1 strand at the middle.
10146	10	7	.....do	449	3 strands 18″ from pin.
10147	10	6	Inside	369	3 strands 22″ from pin.
10148	10	6	Outside	397	1 strand at the middle.
10149	10	7	.....do	405	3 strands at the middle.
10150	10	9	.....do	415	1 strand at the pin.
10151	10	6	Inside	402	1 strand 17″ from pin.
10152	10	6	Outside	405	1 strand at the middle.
10153	10	8	.....do	436	2 strands 18″ from pin.
10154	10	8	.....do	415	3 strands 3″ from pin.
10155	10	7	.....do	406	2 strands at the middle.
10156	10	6	Inside	389	1 strand at the middle.
10157	10	8	Outside	405	1 strand 24″ from pin.
10158	10	9	.....do	402	3 strands 4″ from pin.
10159	10	7	Inside	391	3 strands at the middle.
10160	10	7	Outside	412	1 strand 17″ from pin.
10161	10	7	.....do	449	3 strands 22″ from pin.
10162	10	9	.....do	414	1 strand 18″ from pin.
10163	10	7	.....do	424	1 strand 14″ from pin.
10164	10	12	.....do	445	3 strands 9″ from pin.
10165	10	11	.....do	400	2 strands 18″ from pin.
10166	10	12	.....do	404	3 strands 15″ from pin.
10167	10	10	.....do	488	1 strand 11″ from pin.
10168	10	8	.....do	449	3 strands at the middle.
10169	10	5	Inside	424	3 strands 13″ from pin.
10170	10	8	Outside	438	3 strands at the middle.
10171	10	7	Inside	380	1 strand 16″ from pin.
10172	10	8	Outside	430	3 strands at the middle.
10173	10	6	.....do	446	2 strands 15″ from pin.
10174	10	5	.....do	403	1 strand 10″ from pin.
10175	10	5	.....do	394	2 strands at the middle.
10176	10	7	.....do	396	1 strand at the middle.
10177	10	6	.....do	435	Do.
10178	10	11	.....do	376	1 strand 22″ from pin.
10179	10	6	.....do	440	1 strand 24″ from pin.
10180	10	10	Inside	443	3 strands 6″ from pin.
10181	10	8	.....do	398	1 strand 18″ from pin.
10182	10	5	Outside	423	1 strand 14″ from pin.
10183	10	9	.....do	401	3 strands 2″ from pin.
10184	10	13	.....do	447	2 strands 18″ from pin.
10185	10	13	.....do	400	2 strands 20″ from pin.
10186	10	10	.....do	436	2 strands 18″ from pin.
10187	10	10	.....do	418	2 strands at the pin.
10188	10	11	.....do	404	3 strands 14″ from pin.
10189	10	8	.....do	445	2 strands 12″ from pin.
10190	10	8	.....do	395	1 strand 4″ from pin.
10191	10	8	.....do	435	3 strands at the pin.
10192	10	11	.....do	389	Do.
10193	10	8	.....do	443	Do.
10194	10	8	.....do	421	2 strands 14″ from pin.
10195	10	11	.....do	441	Do.
10196	10	10	.....do	394	1 strand 13″ from pin.
10197	10	10	.....do	386	3 strands at the pin.
10198	10	12	.....do	429	3 strands 3″ from pin.
10199	10	10	.....do	412	1 strand 15″ from pin.
10200	10	8	.....do	447	3 strands at the pin.
10201	10	12	.....do	455	Do.
10202	10	7	.....do	397	2 strands at the middle.
10203	10	7	.....do	447	1 strand 7″ from pin.
10204	10	10	.....do	439	3 strands at the pin.
10205	10	6	.....do	378	Do.
10206	10	8	.....do	419	3 strands at the middle.
10207	10	6	.....do	439	2 strands 3″ from pin.
10208	10	6	.....do	439	3 strands 12″ from pin.
10209	10	10	.....do	427	2 strands 22″ from pin.
10210	10	10	.....do	466	3 strands 12″ from pin.
10211	10	8	.....do	442	2 strands 7″ from pin.
10212	10	8	.....do	410	3 strands at the pin.
10213	10	8	.....do	398	Do.
10214	10	9	.....do	406	2 strands at the middle.
10215	10	11	Inside	387	1 strand 14″ from pin.
10216	10	10	Outside	449	2 strands at the middle.

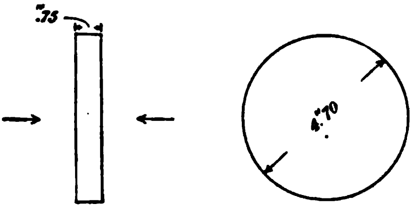
No. 4 Shot Lines—Continued.

No. of test.	Weight of coil.		End of coil tested.	Tensile strength.	Parted.
	Lbs.	*Oz.*		*Pounds.*	
10217	10	7	Outside	383	3 strands at the pin.
10218	10	10	do	438	1 strand 14″ from pin.
10219	10	6	do	432	3 strands 8″ from pin.
10220	10	9	do	378	1 strand 3″ from pin.
10221	10	12	do	397	3 strands at the middle.
10222	10	11	do	451	1 strand at the middle.
10223	10	12	do	410	1 strand 24″ from pin.
10224	10	9	do	412	1 strand 12″ from pin.
10225	10	9	do	436	3 strands 18″ from pin.
10226	10	10	do	436	2 strands 6″ from pin.
10227	10	10	do	452	1 strand 18″ from pin.
10228	10	10	do	397	1 strand 6″ from pin.
10229	10	10	do	406	2 strands at the middle.
10230	10	9	do	397	2 strands 8″ from pin.
10231	10	11	do	397	2 strands 6″ from pin.
10232	10	8	do	392	3 strands 24″ from pin.
10233	10	6	do	401	1 strand 10″ from pin.
10234	10	9	Inside	402	2 strands 19″ from pin.
10235	10	9	do	402	2 strands 3″ from pin.
10236	10	8	Outside	386	3 strands 12″ from pin.
10237	10	8	do	452	3 strands 19″ from pin.
10238	10	6	do	387	2 strands 15″ from pin.
10239	10	6	do	426	3 strands at the pin.
10240	10	6	do	442	2 strands 10″ from pin.
10241	10	10	do	437	1 strand 18″ from pin.
10242	10	10	do	417	3 strands 8″ from pin.
10243	10	7	Inside	401	1 strand 18″ from pin.
10244	10	10	do	395	3 strands 15″ from pin.

COMPRESSION OF RUBBER, BALATA, AND WOOD BUFFERS.

No. 9874.

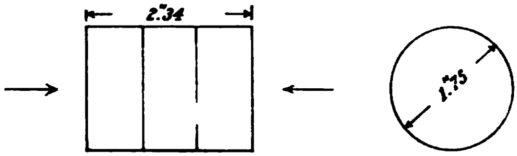
Balata furnished by the Omo Manufacturing Company.



Applied loads.		Compression.	Remarks.
Total.	Per square inch.		
Pounds.	*Pounds.*	*Inch.*	
2,000	....	0.	Initial load.
10,000	....	.04	
20,000	....	.22	
2,000	....	.17	
30,000	....	.29	
30,000	....	.30	After 6 minutes' rest.
2,000	....	.26	
2,000	....	.25	After 2 minutes' rest.
40,000	....	.35	
50,000	....	.39	
2,000	....	.34	
2,000	....	.33	After 2 minutes' rest.

Final diameter, 7″.6, load removed..

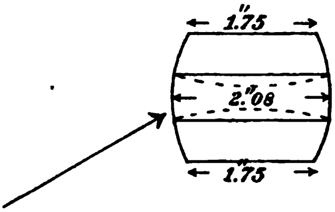
Combined balata and india-rubber spring furnished by the Newton Rubber Company, for 12-inch disappearing gun carriages, March, 1900.



Three thicknesses of spring.
Sectional area, 2.4 square inches.

Applied loads.		Compression of spring.	Remarks.
Total.	Per square inch.		
Pounds.	*Pounds.*	*Inches.*	
24	10	0.	Initial load.
48	20	.004	
96	40	.015	
144	60	.026	
192	80	.037	
240	100	.052	
24	10	.005	
336	140	.079	
432	180	.118	
480	200	.140	
24	10	.026	
576	240	.190	
672	280	.254	
720	300	.276	
24	10	.064	
960	400	.471	
24	10	.119	
1,200	500	.668	
24	10	.199	
1,440	600	.847	
24	10	.306	
1,680	700	1.040	
24	10	.409	
1,920	800	1.160	
24	10	.486	
2,160	900	1.250	
24	10	.561	
2,400	1,000	1.320	
24	10	.629	

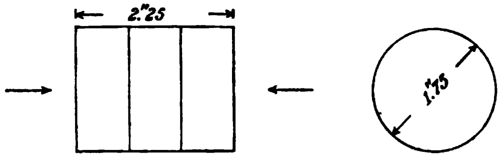
SHAPE AFTER THE TEST.



Middle piece concave ″.12 and ″.15 on the two ends, respectively.

No. 9905.

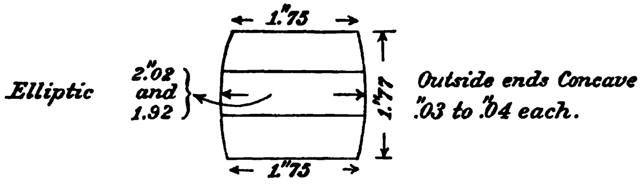
Balata furnished by the Omo Manufacturing Company.



Three thicknesses of balata.
Sectional area, 2.4 square inches.

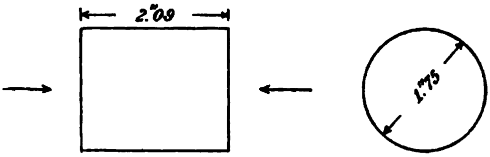
Applied loads.		Compression of spring.	Remarks.
Total.	Per square inch.		
Pounds.	*Pounds.*	*Inches.*	
24	10	0.	Initial load.
48	20	.008	
24	10	.003	
96	40	.016	
144	60	.021	
192	80	.025	
240	100	.029	
24	10	.005	
336	140	.037	
432	180	.043	
480	200	.048	
24	10	.009	
576	240	.058	
672	280	.068	
720	300	.073	
24	10	.012	
960	400	.102	
24	10	.021	
1,200	500	.170	
24	10	.039	
1,440	600	.259	
24	10	.066	
1,680	700	.356	
24	10	.099	
1,920	800	.453	
24	10	.141	
2,160	900	.522	
24	10	.179	
2,400	1,000	.599	
24	10	.215	
2,880	1,200	.765	
24	10	.312	
3,360	1,400	.902	
24	10	.478	

SHAPE AFTER THE TEST.



Test of rubber after an interval of rest of 7 years 5 months after manufacture.

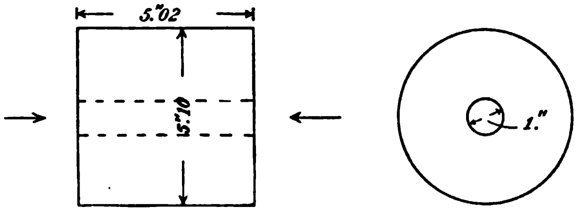
Rubber with 2 ounces of sulphur per pound.



Sectional area, 2.4 square inches.

Applied loads.		Compression of spring.	Remarks.
Total.	Per square inch.		
Pounds.	*Pounds.*	*Inches.*	
24	10	0.	Initial load.
48	20	.073	
96	40	.211	
144	60	.344	
192	80	.453	
240	100	.548	
24	10	0.	
336	140	.705	
432	180	.843	
480	200	.900	
24	10	0.	

Old rubber spring from an 8″ barbette carriage from Fort Rodman, New Bedford, Mass.

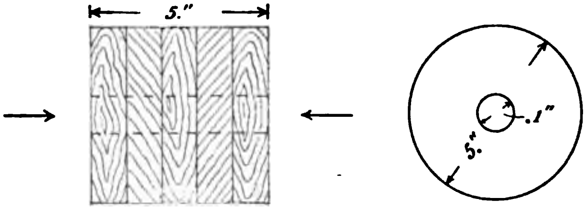


Weight, 6 pounds 5½ ounces.
Sectional area, 19.64 square inches.
One end of spring was pitted where in contact with rusty iron.

Applied loads.		Compression of spring.	Remarks.
Total.	Per square inch.		
Pounds.	*Pounds.*	*Inches.*	
196	10	0.	Initial load.
393	20	.080	
785	40	.192	
1,178	60	.294	
1,571	80	.412	
1,964	100	.532	
196	10	.014	
2,749	140	.789	
3,535	180	1.010	
3,928	200	1.130	
196	10	.049	
4,713	240	1.340	
5,498	280	1.500	
5,892	300	1.590	
196	10	.061	
7,856	400	1.950	
196	10	.064	
9,820	500	2.210	
196	10	.085	
11,784	600	2.400	
196	10	.098	
13,748	700	2.570	Cracks in surface extend.
196	10	.120	
15,712	800	2.680	
196	10	.142	
17,676	900	2.770	
196	10	.151	
19,640	1,000	2.850	
196	10	.155	

No. 9908.

COMPRESSION OF SPRUCE WOOD.

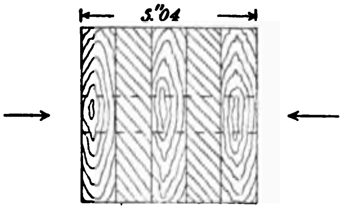


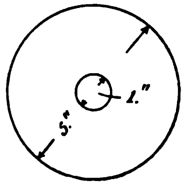
Each layer of wood has the grain crossing the next layer at right angles.

Sectional area 18.85 square inches.

Applied loads.		Compression.	Remarks.
Total.	Per square inch.		
Pounds.	*Pounds.*	*Inches.*	
188	10	.0	Initial load.
377	20	.002	
754	40	.005	
1,131	60	.007	
1,508	80	.010	
1,885	100	.011	
188	10	.001	
2,639	140	.015	
3,393	180	.020	
3,770	200	.021	
188	10	.002	
4,524	240	.025	
5,278	280	.027	
5,655	300	.030	
188	10	.003	
7,540	400	.040	
188	10	.004	
9,425	500	.054	
188	10	.007	
11,310	600	.079	
188	10	.014	
12,195	700	.140	
188	10	.013	
15,080	800	1.029	

COMPRESSION OF OAK WOOD.





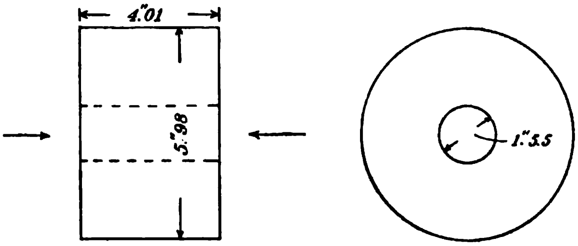
Each layer of wood has the grain crossing the next layer at right angles.

Sectional area, 18.85 square inches.

Applied loads.		Compression.	Remarks.
Total	Per square inch.		
Pounds.	*Pounds.*	*Inch.*	
188	10	0.	Initial load.
1,185	100	.005	
188	10	.001	
3,770	200	.010	
188	10	.002	
5,655	300	.015	
188	10	.003	
7,540	400	.018	
188	10	.003	
9,425	500	.021	
188	10	.003	
11,310	600	.024	
188	10	.004	
12,195	700	.027	
188	10	.004	
15,080	800	.030	
188	10	.004	
16,965	900	.034	
188	10	.005	
18,850	1,000	.038	
188	10	.006	
22,620	1,200	.047	
188	10	.008	
24,390	1,400	.055	
188	10	.011	
30,160	1,600	.096	
188	10	.029	
33,930	1,800	.277	
188	10	.147	
37,700	2,000	.950	
188	10	.675	

No. 9910.

New rubber spring furnished by the Newton Rubber Company.



Weight, 7 pounds 1¼ ounces.
Sectional area, 26.2 square inches.

Applied loads.		Compression of spring.	Remarks.
Total.	Per square inch.		
Pounds.	*Pounds.*	*Inches.*	
262	10	0.	Initial load.
524	20	.080	
1,048	40	.122	
1,572	60	.198	
2,096	80	.275	
2,620	100	.352	
262	10	.015	
3,668	140	.507	
4,716	180	.663	
5,240	200	.739	
262	10	.025	
6,288	240	.876	
7,336	280	1.010	
7,860	300	1.070	
262	10	.041	
8,908	340	1.230	
9,956	380	1.350	
10,480	400	1.390	
262	10	.063	
13,100	500	1.620	
262	10	.070	

CHEMICAL ANALYSES.

STEELS FROM SPRINGFIELD ARMORY.

No. of tension test.	Description.	Marks.	Carbon.	Manganese.	Silicon.	Sulphur.	Phosphorus.	Copper.	Nickel.	Tungsten.	Remarks.
6494	Rifle barrel steel	S 6	0.561	1.200	0.298	0.055	0.027				
6495	do	S B	0.565	1.231	0.300	0.050	0.025				
6550	do	S 6	0.490	1.070	0.365	0.051	0.057				
6551	do	S 6 R	0.494	1.070	0.374	0.047	0.055				
6562	do	6 S	0.636	1.166	0.312	0.080	0.058				
6607	do	H	0.511	0.968	0.254	0.045	0.028	0.060	1.601		
6786	do	S 15 R B	0.490	1.210	0.434	0.062	0.065				
6788	do	S 15 R A B	0.530	1.190	0.309	0.060	0.070				
6705	do	L R B	0.510	1.155	0.219	0.045	0.080				
6847	do		0.500	0.826	0.204	0.032	0.020	0.040	0.000		
6851	do	S 18	0.440	1.230	0.270	0.030	0.062				
6871	do	S 20	0.486	1.300	0.265	0.090	0.074				
6895	do	S 17 R	0.530	1.200	0.235	0.090	0.078				
6896	do	S 17 R A	0.550	1.215	0.239	0.087	0.075				
	do	S 26 .	0.540	1.120	0.168	0.045	0.044				
	do	S 26 . .	0.546	1.105	0.172	0.050	0.044				
	do	S 26 . . .	0.568	1.072	0.161	0.041	0.018				
6872	do	N S	0.300	0.774	0.326	0.037	0.026	0.007	4.000		
6524	Receiver steel	2 R R	0.371	0.654	0.075	0.055	0.065				
6525	do	3 R R	0.360	0.630	0.070	0.060	0.068				
	do	C	0.330	0.603	0.028	0.030	0.015	0.020			Service received.
6897	do	R R 5	0.310	0.550	0.090	0.072	0.078				
	do	End A	0.138								Chips taken from finished re ers after tests by tension. thin parts are represente the middle samples, the thi parts by the end samples. annealed before taking chips.
	do	Middle A	0.132								
	do	End B	0.334								
	do	Middle B	0.334								
	do	End C	0.310								
	do	Middle C	0.315								
	do	End D	0.318								
	do	Middle D	0.360								
6813	Bolt steel		0.772	0.480	0.011	0.040	0.055				
	do	S J B	0.550	0.300	0.169	0.030	0.016				Broken bolt.
	do		0.750	0.450	0.250	0.025	0.017				
	do		0.610	0.420	0.080	0.057	0.010				
	do		0.630	0.392	0.158	0.040	0.020				
	do		0.750	0.420	0.100	0.030	0.025				
	do		0.650	0.358	0.145	0.040	0.024				
	do	C	1.140	0.407	0.160	0.006	0.004			1.000	
6899	Gatling gun steel	G G C	0.475	1.290	0.168	0.085	0.070	0.010			

MISCELLANEOUS STEELS.

No. of tension test.	Description.	Marks.	Carbon.	Manganese.	Silicon.	Sulphur.	Phosphorus.	Copper.	Nickel.	Remark
6511	Jacket, 7″ howitzer	7 H 23 J K T_1 O	0.500	0.710	0.227	0.020	0.020	....	....	
6501	.....do	14816 B_2 F_1, B T_2 N	.563	.663	.127	.020	.020	....	....	
6512	Jacket, 5″ siege gun	13169 B_4 B T_2 N	.509	.699	.141	.025	.021	....	....	
	Shrapnel steel	A	.530	.350	.014	.024	.010	....	....	
	.....do	B	.120	.362	.010	.027	.011	....	....	
6532	Pivot-socket, 15-pounder mount	A 30 3 P S 15	.316	.581	.195	.057	.018	....	....	Cast steel.
6549	.....do	A 63 P S 15	.190	.423	.153	.075	.050	....	....	Do.
6862	.....do	A 93 P S 15	.450	.413	.158	.065	.044	....	....	Do.
6868	Pivot-yoke, 15-pounder mount	S 15 P Y 15	.490	.480	.282	.073	.038	....	....	Do.
6905	.....do	S 24 P Y 15	.425	.470	.300	.058	.039	....	....	Do.
6906	.....do	S 25 P Y 15	.500	.464	.260	.056	.041	....	....	Do.
6914	.....do	S 26 P Y 15	.430	.370	.340	.055	.032	....	....	Do.
6922	Inner base, 15-pounder mount	A 39 2 I B 15	.400	.330	.170	.056	.047	....	....	Do.
6913	.....do	A 63 I B 15	.350	.400	.316	.060	.036	....	....	Do.
9781	Piston-rod, engine 134	134	.390	.440	.030	.053	.044	....	0.000	
9782	Driving axle, engine 923-8	923-8	.440	.535	.280	.036	.040	....	.000	
9783	Driving axle, engine 923-9	923-9	.430	.540	.272	.036	.039	....	.000	
9784	Driving axle, engine 283-8	283-8	.431	.580	.191	.040	.030	....	.000	
9785	Driving axle, engine 283-9	283-9	.425	.600	.202	.043	.035	....	.000	
9786	Driving axle, engine 1428-8	1428-8	.419	.285	.018	.027	.006	....	.000	
9787	Driving axle, engine 1428-9	1428-9	.420	.295	.019	.029	.005	....	.000	
9788	Nickel steel piston-rod	A	.245	.340	.047	.039	.055	....	2.700	
9789	.....do	B	.200	.240	.045	.037	.032	....	2.290	
9790	.....do	C	.324	.200	.038	.040	.037	....	1.890	
9791	.....do	D	.250	.370	.048	.040	.048	....	1.700	
9792	.....do	E	.309	.200	.043	.042	.043	....	1.345	
9793	.....do	F	.334	.562	.335	.045	.020	....	.968	
9794	.....do	H	.350	.560	.237	.045	.024	....	1.278	
9795	.....do	I	.308	.561	.230	.040	.021	....	.927	
9796	.....do	J	.363	.215	.047	.050	.030	....	2.000	
9797	.....do	K	.332	.610	.285	.050	.018	....	.350	

CHEMICAL ANALYSES OF BRONZE AND BRASS.

Marks.	Description.	Cu.	Sn.	Zn.	Fe.	Mn.	Remarks.
A 79 2 R S 6	Recoil sleeve, 6-pounder mount	90.00	8.88	1.12			
1	Guide sleeve, 6-pounder mount	57.90	0.50	41.48			
R C 5	Recoil cylinder, 6-pounder mount	93.75	6.20				
A 15 O S 6	Oscillating slide, 6-pounder mount	89.00	10.06	0.94			
A 47 O S 6	....do	60.10	None.	36.07	1.70	2.13	
A 39 O S 6	....do	90.64	8.32	1.04			
A 23 2 O S 6	....do	89.86	8.56	1.58			
A 52 1 O S 6	....do	89.00	9.80	1.20			
A 52 2 O S 6	....do	88.77	9.98	1.25			
A 61 O S 6	....do	60.02	0.37	35.98	1.75	1.88	
A 62 O S 6	....do	60.00	None.	35.15	1.65	3.20	
A 63 O S 6	....do	60.20	None	34.91	1.63	3.26	
A 23 P Y 6	Pivot yoke, 6-pounder mount	89.56	10.44	Trace.			
A 16 P Y 15	Pivot yoke, 15-pounder mount	88.00	10.21	1.89			
A 62 R S 15	Recoil sleeve, 15-pounder mount	61.00	Trace.	35.93	1.48	1.59	
A 65 R S 15	....do	60.00	None.	37.20	1.60	2.26	
A 66 R S 15	....do	59.89	None.	37.51	1.57	2.53	
A 51—R S 15	....do	60.00	None.	34.70	1.65	3.65	
	Counter recoil buffer, 10-inch disappearing carriage	88.65	9.03	2.20			
	Counter recoil buffer, 12-inch disappearing carriage	67.84	0.66	31.50			From Ordnance Office, Feb. 15, 1900
	....do	65.34	0.69	33.97			From North Point, carriage No. 24
	....do	91.28	7.64	1.08			Do.
No. 2	Lyle life-saving gun	90.79	9.21				
	Pressure cylinders made in France	72.65		26.51	0.84		

TESTS MADE FOR PRIVATE PARTIES DURING THE FISCAL YEAR ENDED JUNE 30, 1900.

Date.	Material.	For whom tested.		
		Name.	City.	State.
1899.				
July 1	Iron pipe	Lamb & Ritchie	Cambridgeport	Mass.
5	Cement	J. P. O'Connell & Co	Dorchester	Mass.
	Manila rope	Durand Woodman	New York	N. Y.
10	Steel bars	The Marlin Fire Arms Co	New Haven	Conn.
20	Rail joints	Boston Elevated Rwy. Co	Boston	Mass.
24	Bicycle balls	Waltham Manufacturing Co	Waltham	Mass.
29	Copper wire	The American Bell Telephone Co	South Boston	Mass.
31	Trolley-wire clamp.	Dr. F. W. Webber	Newton	Mass.
Aug. 4	Hardened steel bars.	Harvey Steel Co	Newark	N. J.
8	Shackles	G. M. Stanwood & Co	Portland	Me.
9	Brass pipe	American Tube Works	Boston	Mass.
	Felt cloth	American Felt Co	do	Mass.
	Leather belting	H. F. Moody	South Weymouth	Mass.
	Rock maple wood	Wason Manufacturing Co	Brightwood	Mass.
16	"Semisteel"	Walworth Manufacturing Co	Boston	Mass.
	Half bricks	Norcross Bros	do	Mass.
25	Cotton cloth	Hood Rubber Co	Watertown	Mass.
26	Wire rope	The Lincoln-Dillaway Co	Boston	Mass.
31	Steel bar	Savage Arms Co	Utica	N. Y.
Sept. 1	Mortar and concrete.	Norcross Bros	Boston	Mass.
6	Shackles	G. M. Stanwood & Co	Portland	Me.
8	Old stay bolts	Mexican Central Rwy. Co	Boston	Mass.
	Cotton sheeting	Hood Rubber Co	Watertown	Mass.
12	do	do	do	Mass.
	Marble	Pennsylvania Marble and Granite Co.	Westgrove	Pa.
14	Bronze sheave	Herbert Loud Block Co	Boston	Mass.
15	Brass pipe	American Tube Works	do	Mass.
20	Steel bar	Savage Arms Co	Utica	N. Y.
22	Copper cylinders	Union Metallic Cartridge Co	Bridgeport	Conn.
25	Steel plate	Schenectady Locomotive Works	Schenectady	N. Y.
	Old boiler plate	Citizens' Electric Light and Power Co.	Houston	Tex.
30	Cotton duck	Fearing, Whiton & Co	Boston	Mass.
Oct. 9	Chain	Panama R. R. Co	New York	N. Y.
11	Bicycle tires	Yatman Rubber Co	Newark	N. J.
Nov. 2	Steel bar	The Marlin Fire Arms Co	New Haven	Conn.
	Turn-buckle	Carson Trench Machine Co	Boston	Mass.
	Bicycle balls	Waltham Manufacturing Co	Waltham	Mass.
	Half bricks	D. J. Curtis & Son	Springfield	Mass.
7	Steel bar	Savage Arms Co	Utica	N. Y.
	do	Remington Arms Co	Ilion	N. Y.
9	Valves	Eynon & Evans Manufacturing Co	Boston	Mass.
17	Manila rope	Durand Woodman	New York	N. Y.
20	Bicycle balls	Waltham Manufacturing Co	Waltham	Mass.
21	Bricks	Norcross Bros	Boston	Mass.
24	Blocks	Boston and Lockport Block Co	do	Mass.
	Soft steel	American Ordnance Co	Lynn	Mass.
28	Steel bar	Savage Arms Co	Utica	N. Y.
Dec. 5	Cast-iron pipes	Bar Harbor Water Co	Bar Harbor	Me.
	Half bricks	Norcross Bros	Boston	Mass.
20	Steel bar	Savage Arms Co	Utica	N. Y.
1900.				
Jan. 5	Steel bars	The Marlin Fire Arms Co	New Haven	Conn.
6	Hollow tile	The H. B. Camp Co	Akron	Ohio.
11	Bicycle balls	Waltham Manufacturing Co	Waltham	Mass.
13	Corrugated-iron flooring.	The Cambridge Manufacturing Co	New York	N. Y.
16	Bicycle balls	Waltham Manufacturing Co	Waltham	Mass.
17	Rubber tires	American Rubber Tire Co	Boston	Mass.
23	Cotton rope	Arthur A. Brigham	do	Mass.
25	Steel bar	Savage Arms Co	Utica	N. Y.
	Leather belting	Standard Rope and Twine Co	Boston	Mass.
30	Steel plate	Schenectady Locomotive Works	Schenectady	N. Y.
Feb. 20	Manila rope	J. H. Smith	Boston	Mass.
	Wrought-iron bars	Bradlee & Co	Philadelphia	Pa.
	Steel plate	Schenectady Locomotive Works	Schenectady	N. Y.
27	Steel bar	Savage Arms Co	Utica	N. Y.
28	Copper cylinders	Union Metallic Cartridge Co	Bridgeport	Conn.
Mar. 12	Malleable cast iron.	E. M. Shaw	Providence	R. I.
16	Steel bars	The Marlin Fire Arms Co	New Haven	Conn.

TESTS MADE FOR PRIVATE PARTIES DURING THE FISCAL YEAR ENDED JUNE 30, 1900—Continued.

Date.	Material.	For whom tested.		
		Name.	City.	State.
1900.				
Mar. 16	Turn-buckle	The Thomas Laughlin Co	Portland	Me.
	Wire rope	Fearing, Whiton & Co	Boston	Mass.
17	Jaw of pipe wrench.	Trimont Manufacturing Co	Roxbury	Mass.
	Steel pole steps	New England Telephone and Telegraph Co.	Boston	Mass.
21	Sewer blocks	Griffin Clay Manufacturing Co	Griffin	Ill.
27	Bronze	William A. Hardy	Fitchburg	Mass.
31	Sample of chimney construction.	Thomas Halleran	Waltham	Mass.
Apr. 13	Bricks	Norcross Bros	Boston	Mass.
20	Steel bar	Savage Arms Co	Utica	N. Y.
24	Steel wire rope and turn-buckle	Henry F. Lippitt	Providence	R. I.
	Steel bars	The Marlin Fire Arms Co	New Haven	Conn.
27	Steel shackles	G. M. Stanwood & Co	Portland	Me.
28	Bricks	Best Brick Co	Mechanicsville	N. Y.
May 1	Manila rope	Standard Rope and Twine Co	Boston	Mass.
9	Bronze	William A. Hardy	Fitchburg	Mass.
31	Jaw of pipe wrench.	Trimont Manufacturing Co	Roxbury	Mass.
June 2	Steel bar	Savage Arms Co	Utica	N. Y.
8	Manila rope	Standard Rope and Twine Co	Boston	Mass.
11	Riveted joints	Babcock & Wilcox Co	Elizabethport	N. J.
14	Bronze and white metal.	The Victor Metals and Foundry Co.	East Braintree	Mass.
15	Wire rope	George Lawley & Son Corp	South Boston	Mass.
19	Cast iron	Boston Elevated Rwy. Co	Boston	Mass.
21	Concrete	Boston Transit Co	do	Mass.
23	Slices from 6-inch navy gun.	Midvale Steel Co	Philadelphia	Pa.
25	Stone	Charles H. Black	Montrose	Mass.
	Shackles	G. M. Stanwood & Co	Portland	Me.

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